AUUGN

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Editorial

In this issue I would like to make welcome two new AUUGN editors:

1. John Mackin will be editing a section on security and he may be contacted as below.

   John Mackin
   Basser Department of Computer Science F09
   University of Sydney
   Sydney NSW 2006

   ACSnet: john@basser.oz

2. Robert Elz has agreed to edit the netnews/netmail section since he has access to a lot of it. He may be contacted as below.

   Robert Elz
   Department of Computer Science
   University of Melbourne
   Parkville VIC 3052

   ACSnet: kre@munnari.oz

We are still looking for people to become involved with the production of AUUGN so if you are interested, contact me as soon as possible. The address and phone number appear on the last page of this issue.

Memberships and Subscriptions

Membership and Subscription forms may be found at the end of this issue and all correspondence should be addressed to

Greg Rose
Honorary Secretary, AUUG
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Kensington NSW 2033
Australia

Next AUUG Meeting

The next AUUG Meeting will be held at the University of Western Australia in Perth on the 11-12th of February 1986 (note the change from the dates published at the Queensland meeting). Further details appear later in this issue.

Contributions

Come on you people out there in UNIX-land, send me your views, ideas, gripes, likes or whatevers.

Opinions expressed by authors and reviewers are not necessarily those of the Australian UNIX systems User Group, its Newsletter or the editorial committee.

Security

This is the first in a series of columns on the subject of UNIX security. These columns will not simply rehash back issues of the Security Mailing List, or provide general advice like "Watch the modes of files in /dev;" rather, our aim will be to provide the system administrator with information about currently important bugs and loopholes. We plan to discuss security in a concrete, rather than abstract, fashion.

We will publish sample code to demonstrate those bugs which require programming to exploit. Such code will be verified before being published, and the affected version or versions of UNIX will be stated. Only by clearly identifying security holes can we foster their elimination.

Your contributions are solicited for this column. If you find a hole in your system, help to make others aware of it by submitting it for publication. Send a description of the problem, with code to manifest it if possible, to the author's ACSnet address: john@basser.oz, or by paper mail to:

John J. Mackin
Basser Department of Computer Science F09
University of Sydney
Sydney NSW 2006

Please include details of the version and origin of the affected user-mode programs, kernel version, and type of hardware if that's relevant.

I will conclude this column with a description of a quite widespread security hole; it can usually be found on a fairly large portion of the boxes seen at any UNIX exhibition. Unfortunately, fewer system administrators seem to be aware of this one than one would hope.

This is applicable to any UNIX system that runs the popular text editor "vi." Many systems have the temporary file preservation program "/usr/lib/ex<version>preserve" [1] setuid-root. This is the way the distributed makefile for vi installs it. The motivation for this is to keep the /usr/preserve directory not writable by others. vi will exec expreserve to copy the editor temporary file from /tmp to /usr/preserve if it receives a terminate signal, and so expreserve will be running with the uid of the user who invoked vi; were it not setuid, it would not be able to write in /usr/preserve unless that directory were writable by others.

So far, this is fine. But the standard version of expreserve wants to send mail to the user, to notify them that their file was preserved. And it invokes the mail program using the library function popen, the standard version of which uses the PATH environment variable to locate the program. So, if the user's PATH contains a "mail" program which will be found before the system standard one (/bin/mail), it will be invoked with root privileges.

The simplest fix for affected sites is simply to make expreserve setgid, say to bin, instead of setuid-root, and set /usr/preserve to be group-owned by, and writable by, bin.

[1] (<version> is the editor version number; the actual pathname will be something like "/usr/lib/ex3.6preserve.")

Netnews

Peter Ivanov, the editor of this publication, has asked me to take over the "netnews" section of AUUGN being part of the effort to spread the editorial load.

So, starting from the next issue, you will find oddments of netnews that I have selected gracing these pages, instead of the ones that Peter has been choosing. I hope that I will be able to do as good a job at selecting the printable articles as he has done. He has included his last selection on the next page.

To aid me in this effort, I am soliciting help from other news readers — however much I would like to, which actually isn't all that much — I cannot hope to read all the netnews that we receive. If you happen to run across an article that you feel would be a worthy candidate for inclusion on these pages, then please mail me its article-id. Note: I don't need the text of the article, given its ID, which appears in the header, I can easily locate that.1 Anyone receiving netnews in Australia should have no trouble sending me mail at the address below, others can try – most people seem to be able to get mail to one of my addresses.

I also intend to try and publish a summary of what's happening in some of the more useful groups. I intend to start small here, and only initially consider the sources groups, in effect providing an index of sources available from netnews, so that those sites not connected can have some means of discovering what is available. If there is anyone who would like to consider summarising any of the other groups, in whatever way is appropriate for that group, please contact me (so that I can arrange to avoid having multiple people working on the same groups).

Here are some electronic addresses that reach me, one way or another. The first one works from anywhere in Australia on our network, various permutations of the others work from occasional sites throughout the rest of the world.

kre@munnari.oz
{seismo,mcvax,ukc,prlb2,ubc-vision}!munnari!kre
{decvax,pesnta,eagle,vax135}!mulga!kre
kre%munnari.oz@seismo.css.gov
kre%munnari.oz@csnet-relay.arpa

Robert Elz

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University of Melbourne,
Parkville,
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Australia.

+61 3 344 5225

1. Actually, if you are not reading this in Australia, then I may not be able to locate the article so easily. In that case, please keep a copy of the article so that I can request a copy from you if necessary.

Netnews (the last from Peter)

I have reproduced below some of my network mail and a few "netnews" articles that I thought may be of interest to Australian UNIX users. I have deleted some of the less meaningful data generated by various mailers and news programs. No responsibility is taken for the accuracy (or lack thereof) of anything below.

From: kre@munnari.OZ (Robert Elz)
Newsgroups: aus.mail
Subject: New routing info installed on munnari
Date: 6 Sep 85 14:16:13 GMT
Organization: Comp Sci, Melbourne Uni, Australia

Munnari's uucp routing database has been updated. About 500 new hosts appeared.

I took the opportunity to delete all the hosts which the router generated addresses that were manifestly bad (contained an '@' character) so attempts to route to them will fail at munnari rather than falling into a bottomless pit in the US. (I don't know that anyone has ever actually attempted to reach one of the ones that were there - they were mostly pretty obscure nodes).

Let me know of any perceived problems.

Robert Elz

From: reid@Glacier.ARPA (Brian Reid)
Newsgroups: net.mail
Subject: smart gateways (forwarded without comment)
Date: 31 Jul 85 23:46:54 GMT
Organization: Stanford University, Computer Systems Lab

Received: from csnet-relay by SUMEX-AIM.ARPA with TCP; Tue 30 Jul 85 18:21:44-PDT
Received: from ibm-sj by csnet-relay.csnet id ai19044; 30 Jul 85 20:09 EDT
Date: Tue, 30 Jul 85 18:24:54 EDT
From: Evan Cohn <ecohn.yktvmt%ibm-sj.csnet@csnet-relay.arpa>
Subject: I forgot

to include something in the last note - it was an example of the robustness of the mail system here - I sent a note to my sister and wherever the word 'at' appeared in the body the mailer would try to make the lhs a person and the rhs a site. The first line is "sorry I couldn't...." ----->

From: Evan Cohn <ecohn.yktvmt%ibm-sj.csnet@csnet-relay.arpa>
To: cara@washington.ARPA, "Sorry I couldn't Talk for long"@home,
"they were almost"@theend,
"of the thin man movie and if I missed it - I would never have known the mur
MMDF-Warning: Parse error in preceding line at CSNET-RELAY.ARPA
<--- If there is a person called "they were almost" at the site 'theend'
he is probably very puzzled right now.
e.c
--
Brian Reid decwrl!glacier!reid

From: angel@adrvax.UUCP (Angel Casado)
Newsgroups: net.mail

BITNET nodes as of 12 July 85

#	Nodename	University name	Operating System	Type
1	BBADMIN	CUNY - Baruch College Admin.	VM/SP Release 3	Full node
2	BBADMIN2	CUNY - Baruch College Admin.	VM/SP Release 3	Full node
3	BB003	CUNY - Baruch College	VM/SP Release 3	Full node
4	BKLYN	CUNY - Brooklyn College	VM/SP Release 3	Full node
5	BMACADM	CUNY - Manhattan C.C. Academic	VM/SP Release 3	Full node
6	BM002	CUNY - Manhattan C.C. Admin.	VM/SP Release 3	Full node
7	BROWNVM	Brown University Comp. Center	VM/SP Release 3	Full node
8	BX001	CUNY - Bronx Community College	VM/SP Release 3	Full node
9	CCNY	CUNY - City College of NY	VM/SP Release 3	Full node
10	CUNYJES3	City University of New York	MVS/JES3 SP 1.3.3	Full node
11	CUNYVM	City University of New York	VM/SP Release 3 HPO 3.4	Full node
12	CUNYVMS1	CUNY - Graduate Center	VAX/VMS	Full node
13	HUNTER	CUNY - Hunter College	VM/SP Release 3	Full node
14	KB001	CUNY - Kingsborough C.C.	VM/SP Release 3	Full node
15	LEHMAN	CUNY - Lehman College	VM/SP Release 3	Full node
16	NJECNVM	NJ Educ. Comp. Net (NJECN)	VM/SP Release 3	Full node
17	NJECNVS	NJ Educ. Comp. Net (NJECN)	MVS/JES3 SP 1.3.1	Full node
18	NY001	CUNY - NYC Technical College	VM/SP Release 3	Full node
19	QB001	CUNY - Queensborough C.C.	VM/SP Release 3	Full node
20	QUEENS	CUNY - Queens College	VM/SP Release 3	Full node
21	SI001	CUNY - College of Staten Isl.	VM/SP Release 3	Full node
22	YALEADS	Yale University Administrative	VM/SP Release 3	Full node
23	YALECS	Yale University CS Department	Unix	Full node
24	YALEMVS	Yale Univ. Computer Center	MVS/JES2	Full node
25	YALEVM	Yale Univ. Computer Center	VM/SP Release 3	Full node
26	YORK	CUNY - York College	VM/SP Release 3	Full node
27	PSUMVS	Penn. State University	MVS/JES2	Full node
28	PSUPDP1	Pennsylvania State University	Unix-R6	Full node
29	PSUVAX1	Pennsylvania State University	Berkeley Unix 4.2	Full node
30	PSUVM	Penn State/Computer Center	VM/SP Release 3.1	Full node
31	CORNELLA	Cornell U. Computer Services	VM/SP Release 3 HPO 3.4	Full node
32	CORNELLC	Cornell U. Computer Services	VM/SP Release 3 HPO 3.4	Full node
33	PUCC	Princeton University/Comp. Ctr	VM/SP Release 3 HPO 3.4	Full node
34	CUVMA	Columbia University (CUCCA)	VM/SP Release 3.1 HPO 3.4	Full node
35	CUVMB	Columbia University (CUCCA)	VM/SP Release 3.1	Full node
36	CUVMC	Columbia University	VM/SP Release 3	Full node
37	CUVMD	Columbia University	VM/SP Release 3	Full node
38	ROCKVAX	Rockefeller University	Berkeley Unix 4.1	Full node
39	BOSTONU	Boston U./Academic Comp.	VM/SP Release 3 HPO 3.2	Full node
40	UCBCMSA	U.C. Berkeley Computer Center	VM/SP Release 2	Full node
41	UCBUNIXA	U.C. Berkeley Computer Center	Berkeley Unix 2.8	Full node
42	UCBUNIXB	U.C. Berkeley Computer Center	Berkeley Unix 2.8	Full node
43	UCBUNIXD	U.C. Berkeley Computer Center	Berkeley Unix 2.8	Full node
44	UCBUNIXE	U.C. Berkeley Computer Center	Berkeley Unix 2.8	Full node
45	UCBUNIXG	U.C. Berkeley Computer Center	Berkeley Unix 4.2	Full node
46	SFASYS	U. of California at SF	VM/SP Release 3	Full node
47	SFBSYS	U. of California at SF	VM/SP Release 3	Full node

48	MITVMA	MIT - Info. Systems	VM/SP Release 3	Full node
49	CRNLCS	Cornell University CS Dept.	Berkeley Unix 4.2	Full node
50	CUMC	Cornell Univ. Medical College	VM/SP Release 2.1	Full node
51	UORMVS	University of Rochester	MVS/JES2	Full node
52	UORVM	University of Rochester	VM/SP Release 2	Full node
53	SUNYBING	SUNY Binghamton	VM/SP Release 3	Full node
54	HARVARDA	Harvard/HCC	VM/SP Release 3	Full node
55	OHSTVMA	Ohio State University / IRCC	VM/SP Release 3	Full node
56	PSUECL	Penn State Engin. Computer Lab	VAX/VMS	Full node
57	MAINE	U. of Maine	VM/SP Release 3	Full node
58	UICMVS	U. of Illinois at Chicago	MVS/JES2	Full node
59	UICVM	U. of Ill. at Chicago	VM/SP	Full node
60	UCONNMVS	University of Connecticut	MVS/JES2	Full node
61	UCONNVM	University of Connecticut	VM/SP Release 2	Full node
62	PSUDEC10	Penn State Engin. Computer Lab	DECsystem10	Full node
63	YKTVMV	IBM TJ Watson Research Ctr	VM/SP HPO 2.0	Full node
64	YKTVMX	IBM TJ Watson Research Ctr	VM/SP HPO 2.0	Full node
65	YKTVMZ	IBM TJ Watson Research Ctr	VM/SP	Full node
66	GWUVM	George Wash. Univ. Comp. Ctr.	VM/SP Release 2	Full node
67	UMBC	Univ. of MD, Baltimore	VAX/VMS 4.1	Full node
68	CUCHEM	Columbia Univ. Chem. Dept.	VAX/VMS	Full node
69	PORTLAND	U. of Southern Maine Portland	VM/SP Release 3	Full node
70	UMDA	Univ. of MD, CSC	VM/SP Release 3	Full node
71	UMDB	Univ. of MD, CSC	VM/SP Release 3	Full node
72	UMDC	Univ. of MD, CSC	VM/SP Release 3	Full node
73	UMDT	Univ. of MD, CSC	VM/SP Release 3	Full node
74	UMD2	Univ. of MD, CSC	Sperry OS 1100 Rel. 39R2	Full node
75	UMD7	Univ. of MD, CSC	Sperry OS 1100 Rel. 39R2	Full node
76	HARVUNXW	Harvard University	Berkeley Unix 2.9	Full node
77	UCBJADE	U.C. Berkeley Computer Center	Berkeley Unix 4.2	Full node
78	SLACVM	SLAC	VM/SP Release 3 HPO 3.4	Full node
79	UIUCUXC	U of Ill at Urbana/CSO	Berkeley Unix 4.1a	Full node
80	UIUCVMD	U of Ill at Urbana/CSO	VM/SP Release 3	Full node
81	UIUCVME	U of Ill at Urbana/CSO	VM/SP Release 3	Full node
82	BROWNCS	Brown University CS Department	Unix	Full node
83	YKTVMT	IBM TJ Watson Research Ctr	VM/SP HPO/2	Full node
84	UCSFCCA	U. of California at SF	Berkeley Unix 4.2	Full node
85	UOFT01	U. of Toledo	VM/SP Release 2	Full node
86	STANFORD	Stanford University	MVS/JES2	Full node
87	UMCVMA	University of Missouri (UMC)	VM/SP Release 2	Full node
88	UMCVMB	University of Missouri (UMC)	VM/SP Release 2	Full node
89	UMMVSA	University of Missouri (UM)	MVS/JES2 SP 1.3.2	Full node
90	UMRVMA	University of Missouri (UMR)	VM/SP Release 2.1	Full node
91	UMRVMB	University of Missouri (UMR)	VM/SP Release 2.1	Full node
92	UMSLVMA	University of Missouri (UMSL)	VM/SP Release 2.1	Full node
93	UMVMA	University of Missouri (UM)	VM/SP Release 3.1	Full node
94	YALEVMX	Yale Univ. Computer Center	VM/SP Release 3	Full node
95	VPIVAX3	Virginia Poly Tech (VPI)	VAX/VMS	Full node
96	VPIVAX5	Virginia Poly Tech (VPI)	VAX/VMS	Full node
97	VPIVM1	Virginia Poly Tech (VPI)	VM/SP Release 3 HPO 3.4	Full node
98	VPIVM2	Virginia Poly Tech (VPI)	VM/SP Release 3	Full node
99	VPIVM3	Virginia Poly Tech (VPI)	VM/SP Release 3	Full node
100	CUCHMB	Columbia Univ. Chem. Dept.	VAX/VMS	Full node
101	SLACCB	SLAC Crystal Ball Exp.	VAX/VMS	Full node

102	DUKE	Duke University	MVS/JES2	Full node
103	NCSUVM	North Carolina State U.	VM/SP Release 3	Full node
104	SLACMAC	SLAC Magnetic Calorimeter	VAX/VMS	Full node
105	TUCC	TUCC	MVS/JES2 SP 1.3.3	Full node
106	UDCVM	Univ. of the Dist. of Columbia	VM/SP Release 3	Full node
107	UNC	Univ. of North Carolina	MVS/JES2 SP 1.1.1	Full node
108	AKRON	University of Akron	MVS/VSPC	Full node
109	VNET	Gateway to VNET (IBM)	VM/SP Release 3	Full node
110	WATSON	Gateway to IBM Research Div.	VM/SP HPO	Full node
111	WUVMA	Washington University	VM/SP Release 2	Full node
112	WUVMD	Washington University	VM/SP Release 2	Full node
113	ANLOS	Argonne National Lab	MVS/JES3	Full node
114	ANLVM	Argonne National Lab	VM/SP Release 3	Full node
115	WVNVM	WV Computer Network (WVNET)	VM/SP Release 3	Full node
116	NCSUVAX	North Carolina State U.	VAX/VMS	Full node
117	ANLCHM	ANL Chemistry Division	VAX/VMS 3.7	Full node
118	ANLCMT	ANL Chemical Technology Div.	VAX/VMS 3.7	Full node
119	ANLHEP	ANL High Energy Phisics Div.	VAX/VMS 3.7	Full node
120	ANLIPNS	ANL Pulsed Neutron Source	VAX/VMS 3.7	Full node
121	ANLPHY	ANL Physics Division	VAX/VMS 3.7	Full node
122	HARVUNXU	Harvard University	Berkeley Unix 4.2	Full node
123	HARVUNXA	Harvard University	Berkeley Unix 2.9	Full node
124	UMDNJPW1	NJ Univ. of Med. & Dentistry	DOS/VSE	Full node
125	UMDNJVM1	New Jersey U. of Medicine	VM/SP	Full node
126	UMDNJVM2	NJ Univ. of Med. & Dentistry	VM/SP	Full node
127	SUVM	Syracuse University	VM/SP Release 3	Full node
128	VPIVAX4	Virginia Poly Tech (VPI)	VAX/VMS	Full node
129	PENNDRLS	U of Penn/DRL Comp. Facility	VM/SP Release 3 HPO 3.4	Full node
130	CSUOHIO	Cleveland State U./Comp Serv	VM/SP Release 2	Full node
131	FNALVM	Fermilab	VM/SP	Full node
132	UCHIMVS1	UofC Computation Center	MVS/JES2 SP 1.3.1	Full node
133	UCHIVM1	U. of Chicago	VM/SP Release 2	Full node
134	NCSUMAE	NCSU Mech. & Aero. Engr.	VM/SP Release 2	Full node
135	UCCCMVS	University of Cincinnati	MVS/JES2	Full node
136	CRNLNS	Cornell U./Lab of Nuc. Studies	VAX/VMS 3.6	Full node
137	CUCCVX	Columbia University Adm. Dept.	VAX/VMS	Full node
138	OACVAX	UCLA-OAC	Unix	Full node
139	UCLAMVS	UCLA-OAC	MVS/JES2 SP 1.3.3	Full node
140	UCLAVM	UCLA-OAC	VM/SP Release 3	Full node
141	UTKVM1	University of Tennessee	VM/SP Release 2	Full node
142	YALEVAX5	Yale University Computer Ctr.	VAX/VMS 3.6	Full node
143	RICE	Rice University/ICSA	VM/SP Release 2.1	Full node
144	EARNET	IBM SC - Roma	VM/SP Release 3	Full node
145	FARMNTON	U. of Maine Farmington	VM/SP Release 3	Full node
146	SJRLVM1	IBM San Jose Research Ctr	VM/SP HPO 2.0	Full node
147	SJRLVM4	IBM San Jose Research Ctr	VM/SP HPO 2.0	Full node
148	SJRLVS1	IBM San Jose Research Ctr	MVS/SP	Full node
149	SJRVM3	IBM San Jose Research Ctr	VM/SP Release 3 HPO 3.4	Full node
150	SLACMK3	SLAC Mark-III Detector Exp.	VAX/VMS	Full node
151	SUCASE	Syracuse University (CASE)	VM/SP Release 3	Full node
152	UMUC	U. of Maryland U. College	VM/SP Release 3	Full node
153	TAMCGF	Texas A&M Engineering Graphics	VAX/VMS	Full node
154	TAMLSR	Texas A&M CS/LSR	VAX/VMS 3.5	Full node
155	TAMMEACA	Texas A&M Univ. ME/CAD	VAX/VMS	Full node

156	TAMMVS1	CSC/Texas A&M University	MVS/JES3 SP 1.3.2	Full node
157	TAMVM1	CSC/Texas A&M University	VM/SP Release 3	Full node
158	TAMVM2	CSC/Texas A&M University	VM/SP Release 3	Full node
159	TAMVXEE	Texas A&M Univ. EE Dept.	VAX/VMS	Full node
160	TAMVXRSC	Texas A&M Remote Sensing Cent.	VAX/VMS	Full node
161	UHUPVM1	U. of Houston	VM/SP Release 2	Full node
162	UMAB	U. of Maryland Med. School	VM/SP	Full node
163	UTA3081	U. of Texas, Austin	VM/SP Release 3	Full node
164	UTA4341	U. of Texas, Austin	VM/SP Release 3	Full node
165	UTSA4341	U. of Texas, San Antonio	VM/SP Release 3	Full node
166	AUVM	American University	VM/SP Release 2	Full node
167	NER	Florida NE Regional Data Ctr	MVS/XA	Full node
168	NERVM	Florida NE Regional Data Ctr	VM/SP Release 3	Full node
169	ANLNESC	ANL Nat'l Software Center	VM/SP Release 3	Full node
170	UCSFHC	U. of Cal.-SF, Hosp. & Clinics	VM/SP Release 2	Full node
171	UNFVM	University of North Florida	VM/SP Release 3	Full node
172	EDUCOM	EDUCOM, Princeton, N.J.	VAX/VMS 3.5	Full node
173	RICECSVM	Rice U. CS Dept.	VM/SP Release 2	Full node
174	YALASTRO	Yale University Astro. Dept.	VM/SP Release 3	Full node
175	MECAN1	U. of Maine Appl. Net	VAX/VMS 3.4	Full node
176	VANDVMS1	Vanderbilt University	VAX/VMS	Full node
177	SLACASP	SLAC ASP Experiment	VAX/VMS	Full node
178	SLACMKII	SLAC Mark-II Detector	VAX/VMS	Full node
179	SLACSLC	SLAC Linear Collider Project	VAX/VMS	Full node
180	SLACTBF	SLAC Test Beam Facility	VAX/VMS	Full node
181	SLACTWGM	SLAC Two-Gamma Experiment	VAX/VMS	Full node
182	SUHEP	Syracuse University (HEP)	VAX/VMS	Full node
183	USCVM	U. of Southern California	VM/SP Release 3	Full node
184	ASUACAD	Arizona State University	VM/SP 3.1 HPO 3.4	Full node
185	ASUEJS	ASU/ECC	VM/SP Release 2	Full node
186	ASUCADAM	ASU/ECC	VM/SP Release 2	Full node
187	CRNLTHRY	Cornell Univ./Theory Center	Berkeley Unix 4.2	Full node
188	NCSUADM	North Carolina State Univ.	MVS/JES2	Full node
189	SLACNIKH	SLAC 2-Gamma Experiment	VAX/VMS	Full node
190	SLACUCD	SLAC 2-Gamma Experiment	VAX/VMS	Full node
191	SLACUCSD	SLAC 2-Gamma Experiment	VAX/VMS	Full node
192	UCBRUBY	U.C. Berkeley Computer Center	Berkeley Unix 4.2	Full node
193	UCHISTEM	UofC Crewe Laboratory	VM/SP Release 3.1	Full node
194	UDACSVM	University of Delaware	VM/SP Release 3 HPO 3.2	Full node
195	UIUCVMC	U of Ill at Urbana/Engineering	VM/SP Release 3	Full node
196	CRNLGSM	Cornell Grad. School of Mgmt.	VAX/VMS	Full node
197	WESLYN	Wesleyan University	VAX/VMS	Full node
198	WISCPSLB	Univ. of Wisc., Phys. Sci. Lab	VAX/VMS	Full node
199	WISCPSLA	Univ. of Wisc., Phys. Sci. Lab	VAX/VMS	Full node
200	WISCPSLC	Univ. of Wisc., Phys. Sci. Lab	VAX/VMS	Full node
201	WISCVM	CS Dept. - Univ. Wisc. at Mad.	VM/SP Release 3	Full node
202	BROWNCOG	Brown Univ. Ctr - Cogn. Sci.	VAX/VMS 3.4	Full node
203	CSU205	Colorado State University	CDC	Full node
204	VPICS1	Virginia Polytechnic Institute	VAX/VMS	Full node
205	IBACSATA	IBACSATA - Bari	VM/SP Release 1.3	Full node
206	IBOINFN	ICINECA - Bologna	RSX11-M V 4.1	Full node
207	ICINECA	ICINECA - Bologna	VM/SP	Full node
208	NEUVMS	NE Univ. Dept. of Physics	VAX/VMS	Full node
209	OHSTVMB	Ohio State University, CAD/CAM	VM/SP Release 3	Full node

210	UMASS	University of Massachusetts	CDC NOS 2.2 Level 602	Full node
211	EB0UB012	Universidad de Barcelona	VM/SP Release 3	Full node
212	EEARN	IBM Madrid Scientific Center	VM/SP Release 3	Full node
213	EMDUAM11	Universidad Autonoma - Madrid	VM/SP Release 3	Full node
214	EMDUPM11	Universidad Politec. - Madrid	VM/SP Release 3	Full node
215	FNAL	Fermilab	VAX/VMS	Full node
216	FNALA	Fermilab	VAX/VMS	Full node
217	FSU	Florida State University	MVS/JES2	Full node
218	UTKVX1	University of Tennessee	VAX/VMS	Full node
219	HAIFAUVM	Haifa University	VM/SP Release 3	Full node
220	ISRAEARN	IBM Israel SC - Haifa	VM/SP Release 3	Full node
221	JHUNIX	Johns Hopkins University	Berkeley Unix 4.1C	Full node
222	JHUVM	Johns Hopkins University	VM/SP Release 3	Full node
223	JHUVMS	Johns Hopkins University	VAX/VMS 3.4	Full node
224	TAUNIVM	Tel Aviv University	VM/SP Release 3	Full node
225	TAUNOS	Tel Aviv University	CDC NOS 2.3	Full node
226	TAURUS	Tel Aviv University	Berkeley Unix 4.2	Full node
227	TECHMVS	Technion - Haifa	MVS/JES2 (guest)	Full node
228	TECHNION	Technion - Haifa	VM/SP Release 3 HPO 3.4	Full node
229	TECHUNIX	Technion - Haifa	Berkeley Unix 4.2	Full node
230	WEIZMANN	Weizmann Institute of Science	VM/SP Release 3 HPO 3.4	Full node
231	WISDOM	Weizmann Inst. Dept. of Math.	Unix	Full node
232	UMRVMC	University of Missouri (UMR)	VM/SP Release 2.1	Full node
233	UCLASAUP	UCLA Arch and Urban Planning	VM/SP Release 3	Full node
234	UCLASSCF	UCLA Social Sciences Facility	VM/SP Release 3	Full node
235	USCVAXQ	U. Of Southern California	VAX/VMS	Full node
236	MUVMS1	Marshall University	VAX/VMS 3.5	Full node
237	UMKCVAX1	University of Missouri (UMKC)	VAX/VMS 3.6	Full node
238	HARVHEP	Harvard/High Energy Physics	VAX/VMS	Full node
239	MITECCF1	MIT - East Campus Comp. Fac.	VM/SP Release 3	Full node
240	CITHEX	Caltech High Energy Physics	VAX/VMS	Full node
241	HAMLET	Caltech	VAX/VMS	Full node
242	UMEE	Univ. of MD	Unix	Full node
243	CANADA01	University of Guelph	VM/SP Release 3	Full node
244	CARLETON	Carleton University		Full node
245	CATE	Center for Adv. Tech. Educ.	VM/SP	Full node
246	CENCOL	Centennial College	VM/SP	Full node
247	HUMBER	Humber College	VM/SP Release 3	Full node
248	MCGILL1	McGill University	VM/SP Release 3	Full node
249	MCMASTER	McMaster University	VAX/VMS 3.6	Full node
250	NSNCC	Louisiana St. U., Baton Rouge	MVS/JES2 SP 1.3.3	Full node
251	NSNCCVM	Louisiana St. U., Baton Rouge	VM/SP Release 3	Full node
252	QUCDN	Queens University	VM/SP Release 3 HPO 3.2	Full node
253	QUCIS	Queens University	Unix	Full node
254	RYERSON	Ryerson Polytechnic	VM/SP	Full node
255	TSSNRC00	NRC, Ottawa	TSS/370	Full node
256	UOGUELPH	University of Guelph	VM/SP Release 3	Full node
257	UOGVAX2	University of Guelph	Berkeley Unix	Full node
258	UOTTAWA	University of Ottawa	VM/SP Release 3	Full node
259	UTORONTO	University of Toronto	VM/SP Release 3	Full node
260	WATACS	Univ. of Waterloo, ACS	VM/SP Release 3	Full node
261	WATARTS	Univ. of Waterloo, Arts VAX	Berkeley Unix 4.2	Full node
262	WATCSG	Univ. of Waterloo, CSG	VM/SP Release 3	Full node
263	WATDCS	Univ. of Waterloo, DCS	VM/SP Release 3 (SSI)	Full node

264	WATDCSU	Univ. of Waterloo, DCS	Berkeley Unix 4.2	Full node
265	WATMNET	Univ. of Waterloo, MICRONET	VM/SP Release 3	Full node
266	YORKVM1	York University	VM/SP Release 3	Full node
267	UFFSC	UF Faculty Support Center	VM/SP Release 3	Full node
268	MITLNS	MIT - Lab. for Nuc. Sci.	VAX/VMS 3.6	Full node
269	UCF1VM	Univ. of Central Florida	VM/SP Release 3	Full node
270	UCF2VM	Univ. of Central Florida	VM/SP Release 3	Full node
271	UFENG	UF College of Engineering	VM/SP Release 3	Full node
272	EB0UB011	Universidad de Barcelona	VM/SP Release 3	Full node
273	ISUMVS	Iowa State University	MVS/JES2	Full node
274	UIAMVS	University of Iowa	MVS/JES2	Full node
275	BOSTCIML	Boston Univ./CIML	VM/SP Release 3 HPO 3.2	Full node
276	CUCEVX	Columbia U. - Civil Eng.	VAX/VMS	Full node
277	NYSPI	NY Psychiatric Institute	VM/SP Release 3	Full node
278	TUCCVM	TUCC	VM/SP Release 3	Full node
279	UIUCHEPA	U of Ill at Urbana/HEP	VAX/VMS	Full node
280	VANDVM1	Vanderbilt University	VM/SP Release 3	Full node
281	BITNIC	BITNET Network Support Center	VM/SP Release 3	Full node
282	IRISHMVS	Univ. of Notre Dame Comp. Ctr	MVS/JES2 SP 1.3.3	Full node
283	IRISHVM	Notre Dame PC Lab	VM/SP Release 2	Full node
284	SLACSLD	SLAC SLD Detector	VAX/VMS	Full node
285	WISCMSE	Univ. of Wisc., Eng. Dept.	VM/SP Release 3	Full node
286	MCGILL2	McGill University	VM/SP Release 3	Full node
287	MCGILLA	McGill University	MUSIC	Full node
288	SITVXA	Stevens Institute of Tech.	VAX/VMS	Full node
289	JHUP	Johns Hopkins Univ. HEP	VAX/VMS 3.6	Full node
290	QUCDNCMC	Queens University CMEC	VAX/VMS	Full node
291	PENNHEP1	U of Penn/HEP	VAX/VMS 3.5	Full node
292	PENNLRSM	U of Penn/LRSM	VAX/VMS 3.6	Full node
293	CITCSSTV	Caltech Comp. Support Services	VAX/VMS	Full node
294	SITVXB	Stevens Institute of Tech.	VAX/VMS	Full node
295	UMKCVAX2	University of Missouri (UMKC)	VAX/VMS 3.6	Full node
296	UMKCVAX3	University of Missouri (UMKC)	VAX/VMS 3.7	Full node
297	YORKVM2	York University	VM/SP Release 3	Full node
298	YULEO	York University	VAX/VMS 3.6	Full node
299	YUORION	York University	VAX/VMS 3.6	Full node
300	VASSAR	Vassar College	VAX/VMS	Full node
301	FNALCDF	Fermilab	VAX/VMS	Full node
302	BNL	Brookhaven National Laboratory	Berkeley Unix	Full node
303	FNALBSN	Fermilab	VAX/VMS	Full node
304	HARVLIT1	Harvard University	Berkeley Unix 2.9	Full node
305	HARVUNXH	Harvard University	Berkeley Unix 4.2	Full node
306	HARVUNXT	Harvard University	Berkeley Unix 4.2	Full node
307	HBUNOS	Hebrew University	CDC NOS 2.3 - NOS/VE 1	Full node
308	ICNUCEVM	Nat'l U. Comp. Ctr - Pisa	VM/SP	Full node
309	ICNUCEVS	Nat'l U. Comp. Ctr - Pisa	MVS/JES2	Full node
310	IFIIDG	Inst. Doc. Guiridica - Firenze	VM/SP	Full node
311	IMIBOCCO	Universita' Bocconi - Milano	VM/SP	Full node
312	IMISIAM	Instituto di Fisica Cosmica	VM/SP	Full node
313	IPACUC	Universita' di Palermo	VM/SP	Full node
314	IPIINFN	INFN - S. Piero a Grado - Pisa	VM/SP	Full node
315	IPIVAXIN	INFN - S. Piero a Grado - Pisa	VAX/VMS	Full node
316	IRMCRA	Ist. Ricerche Aerospaz. - Roma	VM/SP	Full node
317	IRMIAS	Ist. Astro. Spaz. (CNR) - Roma	VM/SP	Full node

318	ITOIMGC	Ist. Meteo. Colonnetti- Torino	VM/SP	Full node
319	NNOMED	Louisiana St. U., Med. Ctr.	MVS/XA	Full node
320	NNOMEDV	Louisiana St. U., Med. Ctr.	VM/SP Release 2	Full node
321	RLG	Stanford University/RLG	MVS/JES2	Full node
322	UORDBV	University of Rochester	VAX/VMS 3.5	Full node
323	WATMTA	Univ. of Waterloo, MTA	VAX/VMS 4.1	Full node
324	YUGEMINI	York University	VAX/VMS 3.6	Full node
325	YUURSA	York University	VAX/VMS 3.6	Full node
326	YUVENUS	York University	VAX/VMS 3.6	Full node
327	YUYETTI	York University	Berkeley Unix 4.2	Full node
328	BIBLIO31	Centennial College	VM/SP	Full node
329	CALTECH	Caltech	VAX/VMS	Full node
330	SUNYABVA	SUNY Buffalo	VAX/VMS	Full node
331	SUNYABVB	SUNY Buffalo	VAX/VMS	Full node
332	UCCCVM1	University of Cincinnati	VM/SP Release 3	Full node
333	ANLEES	ANL Energy & Environ. Systems	VAX/VMS 3.7	Full node
334	ANLEL	ANL Electronics Division	VAX/VMS 3.7	Full node
335	ANLMCS	ANL Math and Computer Science	Berkeley Unix 4.1a	Full node
336	IBAUNIV	Bari University	VM/SP	Full node
337	ICSATAXA	CSATA - Bari	MVS/XA	Full node
338	CBEBDA3T	Berne University	MVS/JES3	Full node
339	CBEBDA3C	Berne University	MVS/JES3	Full node
340	CEARN	CERN	VM/SP	Full node
341	CERNVM	CERN	VM/SP Release 3 HPO 3.4	Full node
342	CGEUGE51	University de Geneve, Suisse	VAX/VMS	Full node
343	CLSEPF51	ETH Lausanne	VAX/VMS	Full node
344	CRVXALFB	CERN	VAX/VMS	Full node
345	CRVXALTP	CERN ALEPH TPC	VAX/VMS	Full node
346	CRVXDEV	CERN OC Developement	VAX/VMS	Full node
347	CZHRZU1A	Zurich University	VM/SP	Full node
348	CZHRZU2B	Zurich University	MVS/JES2	Full node
349	DAAFHT1	FHS Aalen	VM/BSEPP	Full node
350	DBNGMD21	GMD Bonn	MVS/SP 2.1.1	Full node
351	DBNRHRZ1	RHRZ Universitaet Bonn	VM/SP Release 3	Full node
352	DBNRHRZ2	RHRZ Universitaet Bonn	MVS/SP 1.3.2	Full node
353	DBNUAMA1	Inst. Angewandte Mathematik	VM/SP Release 3	Full node
354	DBNUOR1	Oekonom. und Operatns Research	VM/SP Release 2	Full node
355	DBSNRV0	NRV-Gateway TU Braunschweig	DIETZ XOS 5.8	Full node
356	DBSTU1	TU Braunschweig	VM/SP Release 3	Full node
357	DB0HMI41	HMI - Berlin	Siemens BS3000 E40	Full node
358	DB0TUI11	TU Informatik - Berlin	VM	Full node
359	DB0TUM11	TU Maschinen - Berlin	VM	Full node
360	DB0TUS11	TU Schiff u. Meer Berlin	VM	Full node
361	DB0ZIB21	ZIB Berlin	MVS/SP	Full node
362	DCZRZTU0	TU Clausthal	CGK BS 3 19.36	Full node
363	DDADVS1	TH Darmstadt FB Informatik	VM/SP Release 3	Full node
364	DDAGMD11	GMD Darmstadt	VM/SP Release 2.1	Full node
365	DDAGSI3	GSI Darmstadt	MVS/SP 2.1.1	Full node
366	DDATHD21	TH Darmstadt	MVS/SP 1.3.3	Full node
367	DDOHRZ11	Universitaet Dortmund	VM/SP	Full node
368	DEARN	EARN Central Node Germany	VM/SP	Full node
369	DERRZE1	Univ. Erlangen - Nuernberg	VM/SP Release 3	Full node
370	DE0HRZ1A	Universitaet Essen	VM/SP Release 3	Full node
371	DE0WTZ1A	Uni Klinik Essen, Tumorzentrum	VM/SP Release 3	Full node

372	DFVLROP1	DFVLR	VM/SP Release 1.1	Full node
373	DGAIPP1S	MPI fuer Plasmaphysik	VM/SP Release 2	Full node
374	DGOGWD01	Uni. Max-Planck-Gesellschaft	Sperry OS 1100	Full node
375	DHAFEU11	Fernuniversitaet Hagen	VM/SP Release 2	Full node
376	DHDDKFZ1	Krebsforschungzentrum HD	VM/SP Release 3	Full node
377	DHDIBM1	IBM WZH Heidelberg	VM/SP Release 3	Full node
378	DHDIHEP1	Hochenergiephysik Heidelberg	VM/SP Release 3	Full node
379	DHDURZ2	Universitaet Heidelberg	MVS/SP 1.3.3	Full node
380	DHHDESY3	DESY	MVS/SP	Full node
381	DHNFHS1	Fachhochschule Heilbronn	VM/SP Release 3	Full node
382	DHVRRZ01	Universitaet Hannover	CDC NOS/BE 564	Full node
383	DJUKFA11	KFA Juelich - ZAM	VM/SP	Full node
384	DJUKFA21	KFA Juelich - ZAM	MVS/SP	Full node
385	DJUKFA51	KFA Juelich - SNQ	VAX/VMS 3.4	Full node
386	DKAFHS1	Fachhochschule Karlsruhe	VM/SP Release 3	Full node
387	DKAKFK3	Kernforschungszent. Karlsruhe	MVS/SP 1.3.1	Full node
388	DKAUNI11	Universitaet Karlsruhe	VM/SP Release 3	Full node
389	DKAUNI12	Univ. Karlsruhe, Info 3	VM/SP Release 3	Full node
390	DKAUNI13	Univ. Karlsruhe, Info 3	VM/SP Release 3	Full node
391	DKAUNI46	Universitaet Karlsruhe	Siemens BS3000 E40 JES2	Full node
392	DKAUNI48	Universitaet Karlsruhe	Siemens BS3000 E40 JES2	Full node
393	DK0ZA1	ZA - Koeln	VM/SP	Full node
394	DMARUM8	Universitaet Mannheim	Siemens BS2000 NJE	Full node
395	DMSWWU1A	Uni Muenster	VM/SP Release 3	Full node
396	DMSWWU2B	Uni Muenster	MVS/SP 1.3.1	Full node
397	DM0MPF11	MPI psychologische Forschung	VM/SP Release 3	Full node
398	DM0MPI11	MPI Physik u. Astrophysik	VM/SP Release 2.1	Full node
399	DOLUNI0	Uni Oldenburg	CGK BS 3 19.36	Full node
400	DOSUNI	Uni Osnabrueck	CGK BS 3 19.36	Full node
401	DS0IKE51	Inst. f. Kernenergetik	VAX/VMS	Full node
402	DS0MPA51	Materialpruefanstalt Stuttgart	VAX/VMS	Full node
403	DS0RUS51	Rechenzentrum Univ., Stuttgart	VAX/VMS	Full node
404	DS0RUS1I	Uni Stuttgart	VM/SP Release 2.1	Full node
405	DS0RUS1P	Uni Stuttgart	VM/SP Release 2.1	Full node
406	DTUZDV1	Uni Tubingen	VM/SP Release 3	Full node
407	GEN	CERN	MVS/JES2	Full node
408	DTUZDV2	Univ Tuebingen - ZDV BASF	IBM MVS/SP 1.3.4	Full node
409	ASUIC	Arizona State University	VM/SP Release 3	Full node
410	CLVM	Clarkson University	VM/SP Release 3	Full node
411	CLVMS	Clarkson University	VAX/VMS	Full node
412	HARVLAW1	Harvard University	VAX/VMS	Full node
413	HARVMA1	Harvard University	Berkeley Unix 4.2	Full node
414	HARVSC3	Harvard University	VAX/VMS	Full node
415	HARVSC5	Harvard University	VAX/VMS	Full node
416	HARVSC7	Harvard University	Berkeley Unix 4.2	Full node
417	HARVSC8	Harvard University	Berkeley Unix 4.2	Full node
418	UOFT02	University of Toledo	VAX/VMS	Full node
419	YKTVMH	IBM TJ Watson Research Ctr	VM/SP Release 3 HPO 3.2	Full node
420	WVNVAXA	WV Computer Network (WVNET)	VAX/VMS 4.0	Full node
421	PENNDRLN	U of Penn/DRL Comp. Facility	VM/SP Release 3.1	Full node
422	BARILAN	Bar Ilan University	MVS/SP 1.3.3	Full node
423	UIUCVMB	U of Ill at Urbana/VLSI	VM/SP Release 3	Full node
424	DKIUNI0	Universitaet Kiel	DECsystem10 (Tops-10)	Full node
425	DS0FBD11	FBD - Schulen	VM/SP Release 3	Full node

426	UTDALVM1	ACC/Univ. of Texas	VM/SP	Full node
427	YUVULCAN	York University	VAX/VMS 3.6	Full node
428	TTUVM1	UCF/Texas Tech Univ.	VM/SP	Full node
429	DBNVB12	Inst. fuer anorganische Chemie	VM/SP Release 3	Full node
430	WVNMVS	WV Computer Network (WVNET)	MVS/JES2	Full node
431	BINGTJW	SUNY Binghamton	VM/SP Release 3	Full node
432	BINGVMA	SUNY Binghamton	VM/SP Release 3	Full node
433	PSUVAXG	Pennsylvania State University	Berkeley Unix 4.2	Full node
434	PSUVAXS	Pennsylvania State University	Berkeley Unix 4.2	Full node
435	VPISDA	Virginia Poly Tech (VPI)	VAX/VMS	Full node
436	VPIVAX6	Virginia Poly Tech (VPI)	VAX/VMS	Full node
437	UOGOAC1	University of Guelph OAC	VM/SP Release 3	Full node
438	SBHEP	UCSB/HEP VAX	VAX/VMS	Full node
439	DM0TUI1S	Technische Uni., Meunchen	VM/SP Release 2.1	Full node
440	YALENSL	Yale University/NSL	VM/SP Release 3	Full node
441	BINGVMB	SUNY Binghamton	VM/SP Release 3	Full node
442	CZHETH5A	Eidgenoessische Hochschule	VAX/VMS	Full node
443	DKEARN	NEUCC Tech. Univ., Kopenhagen	VM/SP Release 3	Full node
444	BGUNOS	Ben Gurion University	CDC NOS 2.1	Full node
445	UCCVMA	U.C. Corporate Headquarters	VM/SP Release 3	Full node
446	UCSBVM	U.C. Santa Barbara	VM/SP Release 3	Full node
447	UCSCVM	U.C. Santa Cruz	VM/SP Release 3	Full node
448	YALEHEP	Yale University/HEP	VAX/VMS	Full node
449	LUCCPUA	Loyola University	MVS/SP 1.3.3	Full node
450	UOTADM01	University of Ottawa	VAX/VMS 3.6	Full node
451	TAMCBA	ACC/CBA/Texas A&M University	VM/SP Release 3	Full node
452	UWOCC1	University of Western Ontario	VM/SP Release 3	Full node
453	WVNVAXB	WV Computer Network (WVNET)	VAX/VMS 4.0	Full node
454	WVNVAXD	WV Computer Network (WVNET)	VAX/VMS 4.0	Full node
455	WVNVAXE	WV Computer Network (WVNET)	VAX/VMS 4.0	Full node
456	BINGVAXB	SUNY Binghamton	VAX/VMS 3.7	Full node
457	BINGVAXA	SUNY Binghamton	VAX/VMS 3.7	Full node
458	BINGVAXC	SUNY Binghamton	VAX/VMS 3.7	Full node
459	IRLEARN	University College, Dublin	VM/SP Release 2	Full node
460	TECHSEL	Technion - Haifa	Berkeley Unix 4.2	Full node
461	BUASTA	Boston Univ. Astronomy	VAX/VMS 3.7	Full node
462	BUCASA	Boston Univ. Adapt. Sys.	VAX/VMS 3.7	Full node
463	BUCHMA	Boston Univ. Chemistry	VAX/VMS 3.7	Full node
464	BUCHMB	Boston Univ. Chemistry	VAX/VMS 3.6	Full node
465	BUCHMC	Boston Univ. Chemistry	VAX/VMS 3.5	Full node
466	BUENGA	Boston Univ. Engineering	VAX/VMS 3.7	Full node
467	BUPHYA	Boston Univ. Physics	VAX/VMS 3.7	Full node
468	CERNVAX	CERN	Berkeley Unix 4.2	Full node
469	CERNVME	CERN	VM/SP Release 3	Full node
470	CUGSBVM	Columbia Business School	VM/SP Release 2.1	Full node
471	CYBER	CERN	CDC NOS/BE	Full node
472	DKAUNI14	Universitaet Karlsruhe	VM/SP Release 3	Full node
473	UOTVMS01	University of Ottawa	VAX/VMS 3.6	Full node
474	FRECP11	Ecole Centrale de Paris	VM/SP Release 2	Full node
475	FREMP11	Ecole des Mines, Paris	VM/SP Release 2	Full node
476	FRHEC11	HEC, Jouy-en-josas, Paris	VM/SP Release 3	Full node
477	FRIAP51	Inst. d'Astrophysique de Paris	VAX/VMS	Full node
478	FRMOP11	CNUSC, Montpellier	VM/SP Release 3	Full node
479	FRMOP22	CNUSC, Montpellier	MVS/JES2	Full node

480	FRONI51	Observatoire, Nice	VAX/VMS	Full node
481	FRORS31	Circe, Orsay	MVS/SP	Full node
482	FRULM11	Ecole Normale Sup, Paris	VM/SP Release 3	Full node
483	NCSUCHE	North Carolina State U.	VAX/VMS	Full node
484	NCSUIE	North Carolina State U.	VAX/VMS	Full node
485	NCSUMTE	North Carolina State U.	VAX/VMS	Full node
486	NEUMVS1	NEUCC Tech. Univ., Kopenhagen	MVS/JES2	Full node
487	NEUVM1	NEUCC Tech. Univ., Kopenhagen	VM/SP Release 3	Full node
488	CERNADP	CERN		Full node
489	HUJICS	Hebrew University	Berkeley Unix 4.2	Full node
490	BROWNHEP	Brown University/HEP	VAX/VMS 3.0	Full node
491	DMAFHT1	Fachhochschule fuer Technik	VM/SP Release 3	Full node
492	FRTOU71	CICT, Toulouse	Multics	Full node
493	NCSUMAEV	NCSU Mech. & Aero. Engr. Dept	VAX/VMS	Full node
494	PSUARCH	Penn State Arch. ComCAD Lab.	VAX/VMS 3.5	Full node
495	UTCVM	U. of Tennessee, Chattanooga	VM/SP Release 3	Full node
496	UMCINCOM	U. of Maryland, CSC	VAX/VMS 3.7	Full node
497	UMES	U. of Maryland, UMES	VM/SP Release 3	Full node
498	UNBMVS1	University of New Brunswick	MVS/SP 1.3.4 (& VSPC)	Full node
499	DKTC11	Copenhagen Technical College	VM/SP	Full node
500	RITVAXC	Rochester Institute of Tech.	VAX/VMS 4.0	Full node
501	RITVAXD	Rochester Institute of Tech.	VAX/VMS 4.0	Full node
502	RITVM	Rochester Institute of Tech.	VM/SP Release 3	Full node
503	WISCMACC	Univ. of Wisc., MACC	VAX/VMS	Full node
504	SLACCAD	SLAC CAD VAX	VAX/VMS	Full node
505	SLACHRS	SLAC HRS	VAX/VMS	Full node
506	SLACPCR	SLAC PEP Control Room	VAX/VMS	Full node
507	UORHEP	University of Rochester HEP	VAX/VMS 4.1	Full node
508	ANLMST	ANL Materials Science Tech.	VAX/VMS 3.7	Full node
509	CONU1	Concordia University	CDC NOS 2.2	Full node
510	CRNLASTR	Cornell U./Dept. of Astronomy	VAX/VMS 4.0	Full node
511	CUGSBVAX	Columbia Business School	VAX/VMS 3.6	Full node
512	DKUCCC11	University of Copenhagen	VM/SP Release 3	Full node
513	DUKEFSB	Duke Univ. FSB Computer Center	VM/SP Release 2	Full node
514	IPGUNIV	Universita' di Perugia	VM/SP Release 3	Full node
515	IRMCNR	CNR - Roma	VM/SP Release 3	Full node
516	PSU2020	Penn. State Eng. Computer Lab	Tops-20	Full node
517	SUNYABVC	SUNY Buffalo	VAX/VMS 4.0	Full node
518	SUNYBCS	SUNY Buffalo	Berkeley Unix 4.1	Full node
519	UHRCC	U of Houston Rsrch Comp Cntr	VAX/VMS	Full node
520	UTSA4381	U. of Texas, San Antonio	OS/VS1	Full node
521	BKLYNMVS	CUNY - Brooklyn College	MVS/SP 1.3.4	Full node
522	DKCCRE01	Univ. of Copenhagen Comp. Ctr	Sperry OS 1100	Full node
523	UGAIBM1	University of Georgia	MVS/JES3	Full node
524	UWAVM	University of Washington	VM/SP Release 3 HPO 3.4	Full node
525	VCUMVS	VCU Computer Center	MVS/SP 1.3.3	Full node
526	CUCCA	Columbia U Cluster Cntrlr A	Berkeley Unix 4.2	Full node
527	HUJIAGRI	Hebrew University	VAX/VMS	Full node
528	HUJIFH	Hebrew University	Berkeley Unix 4.2	Full node
529	IRUCCIBM	Univ. College Cork, Ireland	VM/SP Release 2	Full node
530	IRUCCVAX	Univ. College Cork, Ireland	VAX/VMS 3.7	Full node
531	RUTGERS9	Rutgers University - CCIS	MVS/SP 1.3.2	Full node
532	TAMPHYS	Texas A&M Univ. Physics Dept.	VAX/VMS 4.0	Full node
533	TAMVXOCN	Texas A&M Oceanography Dept.	VAX/VMS 3.7	Full node

534	WATSCI	U. of Waterloo Facility of Sci	VAX/VMS 3.6	Full node
535	IRIS	Brown University/IRIS	UNIX	Full node
536	TAMLTC	Texas A&M/Learning Tech. Ctr	VAX/VMS	Full node
537	CCNYVME	CUNY - City College of NY	VM/SP Release 3	Full node
538	CORNELLD	Cornell U. PSF	VM/SP Release 3 HPO 3.4	Full node
539	UMDHEP	Univ. of MD, HEP	VAX/VMS 4.0	Full node
540	WSUVM1	Washington State University	VM/SP Release 3	Full node
541	ITSSISSA	SISSA - Trieste	MPX 3.2	Full node
542	TAMCHEM	Texas A&M Univ. Chemistry	VAX/VMS 3.7	Full node
543	DJUKFA53	KFA Juelich - SNQ	VAX/VMS 3.7	Full node
544	IDUI1	University of Idaho	VM/SP Release 3	Full node
545	USMVAX	U. of Southern Maine CSC	VAX/VMS 3.4	Full node
546	NYBVX1	New York University	VAX/VMS 4.x	Full node
547	DKDHI11	Danish HI, Horsholm, Denmark	VM/SP	Full node
548	KSUVM	Kansas State University	VM/SP Release 3	Full node
549	VUENGVAX	Vanderbilt University	VAX/VMS 4.1	Full node
550	JPNSUT10	SUT - Japan	VM/SP Release 3	Full node
551	JPNSUT20	SUT - Japan, Kagura	VM/SP Release 3	Full node
552	JPNSUT30	SUT - Japan, Noda	VM/SP Release 3	Full node
553	HUJIMD	Hebrew University	VAX/VMS	Full node
554	HUJIVMS	Hebrew University	VAX/VMS	Full node
555	UTADNX	U Texas-Austin;Comp. Center	VAX/VMS Version 4.1	Full node
556	WSUVM2	Washington State University	VM/SP Release 3	Full node
557	UHRCC2	U of Houston Rsrch Comp Cntr-2	VAX/VMS	Full node
558	BCVAX3	Boston College Comp. Ctr	VAX/VMS 3.7	Full node
559	BCVMCMS	Boston College Comp. Ctr	VM/SP Release 3	Full node
560	FNALB0	Fermilab	VAX/VMS 4.1	Full node
561	JAXOM	U. Of Southern California	VAX/VMS	Full node
562	RAMOTH	U. Of Southern California	VAX/VMS	Full node
563	UORUNIX	U of Rochester Comp Cntr	Berkeley Unix 4.2	Full node
564	HUJIPRMA	Hebrew University	PRIMOS 19.3	Full node
565	HUJIPRMB	Hebrew University	PRIMOS 19.3	Full node
566	HUJIPRMC	Hebrew University	PRIMOS 19.3	Full node
567	UIUCHEPB	U of Ill at Urbana/HEP-B	VAX/VMS 4.1	Full node
568	UMDD	Univ. of MD, CSC	VM/SP Release 3 HPO 3.4	Full node
569	TAMAGEN	Texas A&M University	VAX/VMS	Full node
570	TAMBIGRF	Texas A&M Univ. Biochem	VAX/VMS 3.6	Full node
571	CSGHSG5A	Hochschule St. Gallen, Switz.	VAX/VMS	Full node
572	PURCCVM	Purdue Univ. Computing Center	VM/SP Release 3	Full node
573	RPICICGE	RPI Graphics Center	VM/SP 2.1	Full node
574	HADASSAH	Hadassah Univ. Hospital	VMS	Full node
575	CLEMSON	Clemson Univ. Computer Center	MVS/SP 2.1.2 JES2	Full node
576	UMINN1	Univ. of Minn. Comp. Center	VM/SP Release 3	Full node
577	GITVM1	Georgia Tech		Full node
578	NORUNIT	Univ. of Trondheim	VM/SP Release 3	Full node
579	SEGUC11	Gothemburg Univ. Comp. Cntr	VM/SP Release 2	Full node
580	SEGUC21	Gothemburg Universities CC	MVS/SP 1.3.3	Full node
581	SEQZ21	Stockholm University CC	MVS/SP3 1.3.1	Full node
582	SEQZ51	Stockholm University CC	VAX/VMS	Full node
583	SEUDAC21	Uppsala Univ. Data Center	MVS/SP 1.3.0	Full node
584	UNIVSCVM	U of South Carolina CSD	VM/SP Release 3 HPO 3.4	Full node
585	CITDEIMO	Caltech Astronomy's DEIMOS		Full node
586	CITROMEO	Caltech Ed. Computing		Full node
587	BNLDAG	Brookhaven Nat. Lab.	VMS Version 4.1	Full node

588	OHSTMVSA	Ohio St. Research Comp.	MVS/SP 1.3.2	Full node
589	UALTAMTS	Univ. of Alberta-MTS	MTS	Full node
590	UNLVM	Univ. Nebraska Comp. Services	VM/SP Release 3 HPO 3.4	Full node
591	SBBIOVM	SUNY/Stony Brook BSCF	VM/SP Release 3.1	Full node
592	SBCCMAIL	SUNY/Stony Brook	VAX/VMS 3.6	Full node
593	NYUCCVM	NYU Computer Center	VM/SP Release 3	Full node
594	DS0RUS0	Univ. Stuttgart, Germany	CDC NOS/BE Level 587	Full node
595	UALTAVM	Univ. of Alberta-VM	VM/SP 3.1	Full node
596	NDSUVM1	HECN-North Dakota St. Univ.	VM/SP Release 3.1 HPO 3.2	Full node
597	AEARN	Austria EARN (Linz)		Unconnect
598	AKRONVM	Univ. of Akron Computer Center	VM/SP Release 3.1	Unconnect
599	BEARN	Belgium EARN (Bruxelles)		Unconnect
600	BYUADMIN	BYU Info Systems Services	VM/SP Release 3	Unconnect
601	BYUCS	BYU Computer Science	VM/SP Release 3	Unconnect
602	BYUCSA	BYU Computer Science VAX	UNIX	Unconnect
603	BYUETIBM	BYU Engineering	VM/SP Release 3	Unconnect
604	BYUIVAX	BYU Instructional VAX	VAX/VMS 4.1	Unconnect
605	BYULIB	BYU Library	VM/SP Release 3	Unconnect
606	BYURVAX	BYU Research VAX	VAX/VMS 4.1	Unconnect
607	CFR	Cntrl Fla Regnl Data Cntr MVS	MVS/SP 1.3.4	Unconnect
608	CFRVM	Cntrl Fla Regnl Data Cntr VM	VM/SP Release 3	Unconnect
609	CGEUGE52	Univ of Geneva, Switzerland	VAX/VMS	Unconnect
610	CLARGRAD	The Claremont Grad. School	VMS 4.1	Unconnect
611	CSUGOLD	Colorado State University	NJEF	Unconnect
612	DHDEMBL5	Euro M. Bio. Lab. Heidelberg	VAX/VMS	Unconnect
613	DHDPHY5	Physikal. Inst. Heidelberg	VAX/VMS 3.7	Unconnect
614	DHHUNI4	Universitaet Hamburg, Germany	BS 3000 MSP 10	Unconnect
615	FNALB	Fermilab	VAX/VMS	Unconnect
616	FNALC	Fermilab	VAX/VMS	Unconnect
617	FNALNET	Fermilab	VAX/VMS	Unconnect
618	HASARA5	Stichting Academ. Rekencentrum	VAX/VMS 4.0	Unconnect
619	HDETHD2	Technische Hoogeschool Delft	MVS/JES2	Unconnect
620	HDETHD5	Technische Hoogeschool Delft	VAX/VMS 3.6	Unconnect
621	HEARN	Katholieke Universiteit	VM/SP Release 3	Unconnect
622	HEITHE5	Tech. Hogeschool Eindhoven	VAX/VMS 3.7	Unconnect
623	HENTHT5	Technische Hogeschool Twente	VAX/VMS 3.7	Unconnect
624	HGRRUG0	Rijksuniversiteit Groningen	CDC NOS 2.1	Unconnect
625	HGRRUG5	Rijksuniversiteit Groningen	VAX/VMS 3.7	Unconnect
626	HLERUL2	Rijksuniversiteit Leiden	MVS/SP 1.1	Unconnect
627	HLERUL5	Rijksuniversiteit Leiden	VAX/VMS 3.7	Unconnect
628	HMARL5	Rijksuniversiteit Limburg	VAX/VMS 4.0	Unconnect
629	HNYKUN11	Katholieke Universiteit	VM/SP Release 3	Unconnect
630	HNYKUN22	Katholieke Universiteit	MVS/SP 1.3	Unconnect
631	HNYKUN51	Uni Nijmegen, Netherlands	VAX/VMS	Unconnect
632	HNYKUN52	Uni Nijmegen, Netherlands	VAX/VMS	Unconnect
633	HNYKUN53	Uni Nijmegen, Netherlands	VAX/VMS	Unconnect
634	HNYKUN54	Uni Nijmegen, Netherlands	VAX/VMS	Unconnect
635	HNYKUN55	Uni Nijmegen, Netherlands	VAX/VMS	Unconnect
636	HROEUR5	Erasmus Universiteit Rotterdam	VAX/VMS 3.7	Unconnect
637	HTIKHT5	Katholieke Hogeschool	VAX/VMS 3.5	Unconnect
638	HUTRUU0	Rijksuniversiteit Utrecht	Data General AOS/VE	Unconnect
639	HWALHW5	Landbouwhogeschool Wageningen	VAX/VMS 3.7	Unconnect
640	IECMICC	Illinois Educ. Consortium		Unconnect
641	IITVAX	Illinois. Inst. of Tech.	VAX/VMS	Unconnect

642	NIHCU	National Institutes of Health	MVS/XA 2.1.2 JES2 1.3.4	Unconnect
643	NMSUMVS1	New Mexico State Univ.	MVS/SP 1.3.3	Unconnect
644	NMSUVM1	New Mexico State Univ.	VM/SP Release 3	Unconnect
645	NSERC1	Ntrl. Sci. Rsrch. Cncl. Canada	MVS/XA	Unconnect
646	NTSU	North Texas State University		Unconnect
647	OREGON1	U of O Computing Center	VM/SP Release 3	Unconnect
648	ORSTATE1	Oregon State U Computer Center	NOS 2.3	Unconnect
649	PHASTVAX	Univ. of Wash. Physics VAX	VMS 4.1	Unconnect
650	POLYTECH	PINY Comp. Center	VM/SP Release 3	Unconnect
651	PUFORBES	Princeton U Comp Cntr-FORBES	VM/SP Release 3	Unconnect
652	PUNFS	Princeton U Comp Cntr-NFS	VM/SP Release 3	Unconnect
653	PURCHE	Purdue Chem. Engineering	VM/SP Release 3	Unconnect
654	PURVLSI	Purdue Univ. EE VLSI Lab	VM/SP Release 3	Unconnect
655	PU1879	Princeton U Comp Cntr-1879	VM/SP Release 3	Unconnect
656	REGINA			Unconnect
657	RUTHEP	Rutgers Univ HEP	VAX/VMS 4.0	Unconnect
658	SASK	Univ. of Saskatchewan	VMS 4.1	Unconnect
659	SEARN	Sweden EARN (Stockholm)		Unconnect
660	SFU	SFU Computing Services	MTS D5.1	Unconnect
661	SFUVM	Simon Fraser Univ.-VM	VM/SP Release 3.1	Unconnect
662	TCSVM	Tulane Computer Services - VM	VM/SP - HPO 3.4	Unconnect
663	TEMPLEVM	Temple Univ. Comp. Activity	VM/SP Release 3.1	Unconnect
664	UA	Univ. of Alabama Comp. Center	VM/SP Release 3.2	Unconnect
665	UABTUCC	Univ. of Alabama-Birmingham	MVS/SP Release 1.3.4	Unconnect
666	UCIVMS	Univ. of CA. Irvine Comp. Fac.	VMS 3.1	Unconnect
667	UCRVMS	UC Riverside Acad. Computing	VMS Version 4.2	Unconnect
668	UGA	University of Georgia	VM/SP Release 3	Unconnect
669	UGACDC1	University of Georgia	NOS 2.2	Unconnect
670	UGA205	University of Georgia	VSOS 2.1.6	Unconnect
671	UICACC1	U. of Illinois Admin.	MVS/JES2	Unconnect
672	UKACRL	Great Britain EARN (London)		Unconnect
673	UKCC	U of Kentucky Computing Cntr	VM/SP Release 3	Unconnect
674	UMASSVM	Univ. of Mass., Engineering	VM/SP Release 3	Unconnect
675	UNMB	Univ. of New Mexico	VAX/VMS	Unconnect
676	UNO	U of New Orleans Rsrch Cntr	VAX/VMS 4.1A	Unconnect
677	UOFMCC	Univ. of Manitoba		Unconnect
678	UORUNIVX	University of Rochester	Berkeley Unix V4.2	Unconnect
679	USCN	University of Georgia	NOS 2.2	Unconnect
680	UTELP	U. of Texas at El Paso		Unconnect
681	UVPHYS	Univ. of Victoria-VAX		Unconnect
682	UVSE	Univ. of Victoria-SE		Unconnect
683	UVUNIX	Univ. of Victoria	UNIX	Unconnect
684	UVVM	Univ. of Victoria	VM	Unconnect
685	UWACDC	Univ. of Washington ACC	NOS 2.3	Unconnect
686	UWAEE	Univ. Wash. Electrical Engr.	VM/SP Release 3.0	Unconnect
687	UWAV1	Univ. of Washington ACC VAX	VAX/VMS 3.7	Unconnect
688	UWAV2	Univ. of Washington ACC VAX2	VAX/VMS 3.7	Unconnect
689	UWAV3	Univ. of Washington ACC VAX3	VAX/VMS 3.7	Unconnect
690	UWAV4	Univ. of Washington ACC VAX4	VAX/VMS 3.7	Unconnect
691	UWAV5	Univ. of Washington ACC VAX5	VAX/VMS 3.7	Unconnect
692	WYOCDC1	University of Wyoming	CDC NOS 2.3 L617	Unconnect
693	WYOCDC2	University of Wyoming	CDC NOS 2.3 L617	Unconnect
694	YALPH2	Yale University/HEP2	VAX/VMS	Unconnect

An Open Letter to the AUUG Membership

Dear Members,

The AUUG celebrated its ninth birthday on schedule with its meeting in Brisbane in August. This was a very pleasant occasion for all who were able to be there. Our invited speaker, Stuart Feldman from Bell Communications Research in Morristown, New Jersey, was both entertaining and provocative. In spite of the predations of the local bus company, the conference dinner was a cheerful and enjoyable event, and the view out from the restaurant on Mount Cootha over Brisbane was quite scintillating. Tim Roper and his committee did an excellent job in organising the whole show, and made sure that it ran smoothly throughout (.... well, there was the matter of that bus driver ...). They all deserve our thanks and commendation.

Having said this, the Brisbane meeting was not entirely successful by every possible criterion. The attendance was lower than might have been reasonably expected and the number of papers presented was a little less than it should have been. On the other hand the opportunity for conferees to meet one another and actually confer was very good, the relatively small number of exhibitors had plenty of traffic past their stands, and the scheduled tutorial sessions were well attended. The lessons we must learn for the future are that:

1. we must do more promotion and publicity for future meetings;

2. we must encourage more talks on interesting new applications;

3. we must continue to develop and expand the activities that transfer knowledge and experience from the 'old hands' to the newcomers.

The AUUG has always existed primarily to share experience and knowledge regarding systems identified with that well-known trademark of A.T.T. Bell Laboratories. In the beginning we were all novices. Today our meetings are attended by people with wide ranges of experience, measured both by years and intensity. It is important that newcomers are made welcome, that their queries and questions are taken seriously (none of that 'oh we solved that problem back in '78; where were you then?' sort of thing), that their opinions are listened to, and that they find the association with AUUG to be profitable, useful and comfortable.

At present the AUUG has three main activities:

1. publishing the newsletter;

2. holding twice-yearly technical meetings;

3. sharing with Computerworld in the production of the UNIXworld conference and exhibition.

Which of these do you think is most valuable? to you personally? to everbody? As a member of AUUG, you ought to be contributing to at least one, and quite possibly all of these activities.

The Newsletter

Why isn't the editor being inundated by suggestions, solutions, contributions? If you don't have an answer, then surely you have a question. (For instance, I have a serious, technical question: ''what is the best way to embed comments into a script for the 'sed' command?)

As you will read elsewhere in this issue, we already have some new sections starting up, with their own newly appointed section editors. If you don't want to write a column (and not everyone feels that confident) then you should be able to make suggestions and/or comments.

The Meetings

The next AUUG meeting will be held in Perth in February. This is even further away than Brisbane for most of us. That is a disadvantage. But Perth is an exciting city to visit, and most of us haven't been there enough for it to become boring. That is at least one advantage. So if you don't work for a company that has a pressing need to send you there anyway, how do you get there?

Well it will help if you present a paper (the Management Committee has already decided as a matter of policy that all speakers in future will be offered a ticket to the conference dinner.) It will help even more if you prepare an adequate, written version of your paper suitable for publication in AUUGN. (Although the Management Committee has not yet finalised a policy on this, I am pressing them to agree that some support should be offered for travel for such authors, who would otherwise be unable to attend.) By planning now, and sharing your experience with others, you too can afford to visit Perth next February.

UNIXworld

This conference and exhibition is one of the important activities in the AUUG calendar. Although many AUUG members may not feel that the conference sessions have much direct relevance for them (the finer points of writing device drivers will definitely not be on the agenda), many members, even you yourself, would still like to be there. Again, if your company or organisation is not willing to pay for your attendance, you can still attend the exhibition (nominal entrance fee), or, if you are prepared to make the personal commitment, you can contribute directly in one of a number of ways, and hence gain an entree to other activities.

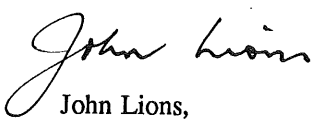
Last year, UNIXworld—which admittedly wasn't our idea—presented us with a challenge. Fortunately your committee was able to meet Stephen Moore and Computerworld, the organisers half-way, and to negotiate a mutually beneficial arrangement. Having been around the loop once, we now know much better how this arrangement can work to improve the benefits for everyone. Other UNIX users groups—USENIX in the U.S.A., EUUG in Europe—have not yet solved to everyone's satisfaction the problems of allying the interests of the UNIX devotees and purists with the those of the companies commercial users and developers of UNIX systems. With UNIXworld we have a chance to solve the same problems for ourselves in a way that can suit us all.

The theme of next year's UNIXworld—again at the Sydney Hilton on May 6-8— will be 'Problem solving with UNIX'.

Most of us know how to solve at least some of our problems this way. Why don't you write a paper describing how you solved a problem that was important to you? It doesn't have to be a big problem, or even a world-shattering one—just one where the UNIX solution was interesting and useful. If the solution was compact and quickly produced—then so much the better. If the alternative solution (in Cobol?) would have taken for ever, then better still. Please contact me if you are interested in participating in this.

Another activity connected with UNIXworld will be a series of tutorials on UNIX-related topics. Many of these will be intended for beginners, or people with very little prior experience. Others may be more ambitious, and cater for more experienced users. The tutorial programme is being coordinated by Ken McDonell of Monash University. He will be glad to hear from you, whether you wish to offer advice, assistance or just old-fashioned encouragement.

Yours sincerely,



John Lions,
President, AUUG.

JAMES W. MANN

A.A.S.A.

PUBLIC ACCOUNTANT

370 BLACKSHAWS ROAD,
ALTONA NORTH, 3025

TELEPHONES: 314-6179, 314-6374
AFTER HOURS: 052 82 1267

PLEASE ADDRESS ALL CORRESPONDENCE TO
P.O. BOX 136, ALTONA NORTH 3025

22nd August 1985

Mr Chris Maltby

Honorary Treasurer
Australian UNIX-Systems User's Group
PO Box 366
Kensington NSW 2033

Dear Sir,

AUDIT OF FINANCIAL STATEMENTS
1985 YEAR

I have been presented with the Statement of Income & Expenditure for the year ending 30th June 1985 together with the bank statements and accounts paid vouchers of the Australian UNIX-System User's Group.

I certify that the accounts as presented are a true record of the affairs of the Group for the financial year then ended.

Yours Faithfully

James W Mann
FASA, LCA

Australian Unix-systems Users' Group

Statement for Financial Year 1984/85

Credits

Date	Amount	Subtotals	Comments
01/07/84	$3144.51		Opening Bank Balance
		$3144.51	Total Value of Assets
27/09/84	$670.00		Memberships/Subscriptions/Backissues
08/10/84	$110.00		Memberships/Subscriptions/Backissues
28/12/84	$4846.29		Melbourne Aug 84 Meeting Surplus[1]
07/01/85	$548.00		Memberships/Subscriptions/Backissues
08/01/85	$80.00		Memberships/Subscriptions/Backissues
04/02/85	$528.00		Memberships/Subscriptions/Backissues
08/02/85	$304.00		Memberships/Subscriptions/Backissues
13/02/85	$1315.00		Memberships/Subscriptions/Backissues
18/02/85	$519.00		Memberships/Subscriptions/Backissues
12/03/85	$372.79		Memberships/Subscriptions/Backissues
12/03/85	$360.00		Memberships/Subscriptions/Backissues
29/03/85	$270.00		Memberships/Subscriptions/Backissues
29/03/85	$675.00		Memberships/Subscriptions/Backissues
09/05/85	$499.00		Memberships/Subscriptions/Backissues
20/05/85	$90.00		Memberships/Subscriptions/Backissues
20/05/85	$250.00		Memberships/Subscriptions/Backissues
24/05/85	$80.00		Memberships/Subscriptions/Backissues
29/05/85	$458.00		Memberships/Subscriptions/Backissues
03/06/85	$139.85		Interest
12/06/85	$210.00		Memberships/Subscriptions/Backissues
20/06/85	$2493.72		Wollongong Feb 85 Meeting Surplus[2]
20/06/85	$210.00		Memberships/Subscriptions/Backissues
		$15028.65	Total Income
		$18173.16	Total

Debits

Date	Amount	Subtotals	Comments
06/08/84	$1380.00		Rob Pike's air travel expenses
08/10/84	$9.90		Secretary (Minute book etc.)
08/10/84	$72.50		Special Executive Meeting - Lunch
26/11/84	$301.50		Ken McDonell's expenses 8/10 meeting
26/11/84	$291.40		Tim Roper's expenses 8/10 meeting
26/11/84	$10.40		Piers Lauder expenses 17,23/10 meetings
11/12/84	$1155.00		AUUGN Vol 5 #6
21/01/85	$12.12		Secretary (Post Box fee)
04/02/85	$120.00		Melbourne Uni - mispaid cheque
10/02/85	$80.00		Dinner for exec meeting - Wollongong
19/02/85	$104.50		Dishonoured cheque + charges[3]
04/04/85	$36.00		Australia Post - PO Box 366 Kensington
20/05/85	$1980.00		AUUGN Vol 6 #1
25/06/85	$500.00		Float for Brisbane Meeting
30/06/85	$7.91		FID and FDT
		$6061.23	Total Expenditure
30/06/85	$12111.93		Closing Bank balance
		$12111.93	Total Value of Assets
		$18173.16	Total
		$8967.42	Surplus of Income over Expenditure

1 Not including Rob Pike's expenses.
2 Including Richard Miller's expenses.
3 Recovered subsequently.

AUUG
Australian UNIX-Systems Users' Group
PO Box 366, Kensington NSW 2033
Phone: +61-2-662-4111, Telex: AA 74948

27th September 1985

Notes on Financial Statement for 1984-85.

The format of the statement is no doubt unconventional, but we are supposed to be innovative in computer use, and it's amazing what you can do with "dc".

Income for the year was roughly evenly divided between Membership/Subscription fees and Meeting surplusses. The meeting result for 1985-86 is likely to be smaller as both meetings will be outside Sydney or Melbourne.

The only major expense for the year was the production of AUUGN, as the cost of Rob Pike's attendance as the keynote speaker at the Melbourne Meeting was adequately covered by the meeting surplus. The good financial return was partly the result of there being only 2 issues of AUUGN published (or at least paid for) during the year. Had the normal 6 issues been published we would have spent up to $9000 on AUUGN. This indicates a substantial subsidy of the costs of AUUGN from meeting income. A $30 subscription is severely undervalued at this rate of expense, which is about $54 per financial member. There are quite a few unfinancial members who could help to increase the economies of scale by rejoining, so "Why not get your own copy rushed to you instead of reading it over a shoulder in the train?".

Chris Maltby
Honorary Treasurer
(*chris@neology.oz*)

Unfinancial Members of AUUG

as at 24th September 1985

A.A.E.C. Librarian
A.C.S. (N.S.W.)
• R. Balsdon
• Peter D. Barnes
• Professor Chris J. Barter
• Trevor Barton
• Michael Belfer
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• B.C.P. Borun
• Colin Boswell
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• Ian Smith
• Armando P. Stettner
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• Geoff Swan
• Carole Sweaney
• Prof. G. Tate
Neil William Teague
• Derek Thomas
• Mr. Milton F. Thrasher
• K C Toh
• Bob Trewin
• Peter Webb
• Rob Webb
• Oki Widjaja
• Nigel Williams
• T. Willoughby
• Clive Winkler
• Richard Wolff
• John Wulff

•Founding member

Financial Members of AUUG

as at 24th September 1985

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Mr. R. W. Anderson
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• Derek Austin
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Ron Baxter
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Craig Bishop
Craig Bishop
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Russell A. McDonell
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Graham Menhennitt
• Scott Merrilees
Mr. Sol Millin
Penelope Montague
Colin G. Murphy
Mr. Ross Nealon
• Willma Nelowkin
• Albert Nymeyer
• Mr. Paul F. Obrien
• W. David Owen
• Peter Pamment
Mr. Philip T. Parker
• Veronica Paul
Mr. Bill Petheram
• Michael A. Podhorodecki
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Minutes of AUUG Management Committee Meeting

held 26th August, 1985 at

Brisbane

Meeting opened 17:20

Present: Entire Executive Committee, Stephen Moore, Peter Ivanov.

1. Previous Minutes.

   Amendment of motion - Robert Elz dissents motion passed in his name. Agreed to rescind the motion in question.

2. Business Arising.

   Did not hold meeting mentioned in previous minutes.

3. Computerworld Meeting

   Tabled letter from Stephen Moore. Discussion ensues about structure. $250.00 per session, return economy air fare for tutorials given. Suggestions for Program Committee (excluding Tutorials). John Lions to complete negotiation. Peter Ivanov raised question about Computerworld selling AUUG database.

4. Newsletter.

   Peter Ivanov said too much work for one person. Better if others can be joined in to the production, e.g. netnews watcher, security issues, etc. Suggest reimbursement for special effort.

   Much mention of George Kestevan's good job. Concern over promptness of newsletter and Peter mentions lack of material. Robert Elz suggests getting others from our organisations and roping them in. Need both contributions and departments.

Meeting adjourned to 5:00 p.m. 27th August, 1985

Meeting re-opened 5:30 p.m. 27th August, 1985

Present: Executive Committee, Glenn Huxtable.

Robert Elz wants more formal approach to the meetings, and more preparation.

Tim Roper asked whether Canberra had been approached. Suggested Peter Wishart, Malcolm Smith.

Discussion with Glenn Huxtable about possible worries: Accommodation, executive organisation. Meeting agreed on $1000.00 initial advance for this meeting. Suggested first announcement to be October 1st, 1985.

Motion Moved John Lions. That all speakers will be offered a free ticket to dinner. Remission of fees for those who supply papers at least 2000 words by the specified date. Seconded by Ken MacDonald.

Motion Carried

Suggestions for assistance:

Moved. That we be willing to consider applications from people to speak at AUUG conferences to be subsidised.

The question of offering subsidies is to be deferred until Glenn Huxtable has explored discounts on flights.

Secretary to write to Peter Collinson re: suggestions only on UKC!pc@mumari. John Lions has extended an invitation to Roger Hicks president of NZUUG. Other possibilities are Mike Karls, Mike O'Dell and Kirk MacKusic.

Secretary to draft letter to invite speakers from large manufacturers etc, asking for Technical presentations. The letter is to be circulated to executive before sending to anybody.

Program Chairman to be sought: Suggest Ross Nealon, Ian Richards, Jason Catlett. As this is urgent secretary will organise.

Future Conferences.

Sydney - 1987 Suggested.

Motion moved by John Lions. That future August meeting be held in the Sydney area. Seconded by Greg Rose.

Motion Passed.

Thus Sydney (UNSW) in August, 1987 and Melbourne in February 1987.

Ways to spend money:

Secretarial services should have real secretary. Wanda Barnier Pro Tem.

Motion Moved by Tim Roper. That Computerworld be offered 20% flat. Seconded Piers Lauder.

Motion Carried.

We should use network more. Membership drive particularly. Membership form to be News!d.

Meeting closed 18:40.

Minutes of the Annual General Meeting

of A.U.U.G.

Meeting opened 9:03 a.m.

Previous minutes read. Moved by chair that minutes be accepted.

Passed.

Discussion about the venue of Winter meetings being less cold.

Moved by Tim Roper. That Canberra be invited to host August meeting. Seconded by Chris Maltby.

Passed 15/5.

Chris Campbell asks about the "instant election", and workability of the committee being split across cities.

Treasurer's Report.

No problem auditing. Closing balance $12111.93. Motion moved by Peter Ivanov to accept report. Seconded by Chris Campbell.

Motion passed.

Discussion of Elections.

Existing Executive renominated en-masse, and no other candidates applied or were canvassed.

President's Report

Request to members for further assistance especially with respect to the newsletter, organising meetings etc. Also need people to give talks. Suggested that speakers be given free dinner and free registration if accompanied by a printable paper.

Discussion about Equipment Displays.

Ross Nealon against displays. Tim Roper, Robert Elz and Greg Rose for equipment displays. Chris Campbell very much for displays. Consensus seems to be in favour of equipment displays.

Discussion of Unix/World Expo.

Stephen Moore invited to speak. Ron Baxter complained about the cost. Somebody else mentioned there being no point in having technical sessions. Chris Campbell recommends dual streams.

Moved by Tim Roper. That the meeting be adjourned. Seconded by Robert Elz.

Motion passed.

The Hideous Name

Rob Pike
P.J. Weinberger

AT&T Bell Laboratories
Murray Hill, New Jersey 07974

ABSTRACT

The principles of good naming in computing have been known for decades, and partly because it follows them, the UNIX† operating system is unusually easy to use and to extend. The invention of new facilities can be guided by these principles, so that merely providing a file system name for a service, for example the Eighth Edition file `/dev/stdin`, determines many of its properties. The development of networking has not introduced any change to the majority of UNIX system utilities because objects such as files on remote machines can be given syntactically familiar names within the local machine's name space. UNIX systems are now being connected to outside networks that have complicated naming schemes. As a result, UNIX software must be changed to cope with irregularly constructed names. The practitioners of internetworking would profit by understanding the benefits of simple, uniform syntax.

research!ucbvax!@cmu-cs-pt.arpa:@CMU-ITC-LINUS:dave%CMU-ITC-LINUS@CMU-CS-PT
- Carnegie-Mellon University mailer

I cannot tell what the dickens his name is.
- Shakespeare, *Merry Wives of Windsor*, II. ii. 20.

Any object relevant to computation — file, process, user, computer, network or whatever — needs a name. The name determines the access: it is by interpreting the name that a program (say) is given access to the object. The manner in which names are constructed affects not only how objects are named but also how they are used. A UNIX file name, for example, is a path from one node to another in a tree of names (the name space). The representation of the name is a simple ASCII string, and only by interpreting the string as node names separated by slashes is the file actually identified. The structure of the name space (a directory tree) is reflected in the style of the name (a path through the tree). Were the file system arranged differently, say as a flat array, the form and interpretation of file names would also be different; for example, UNIX processes are named by small integers.

The form of the name space is the subject of this essay. We will use file names in various operating systems to illustrate criteria for distinguishing good names from bad ones. These criteria are then applied to network mail names, including 'standard' ARPA Internet mail names. The criteria are not new, but seem to have been forgotten, so it is worth attempting to re-establish them.

Name spaces have some general properties. First, names within the space may be absolute or relative. Absolute names specify an object by position with respect to a single fixed point, such as the UNIX file system 'root' (named /); relative names, with respect to a local point (the 'current directory,' named .). Also, a name space typically has operators to change the space, such as the

† UNIX is a Trademark of AT&T Bell Laboratories.

UNIX `creat`, `unlink`, `link`, `mount` and `chroot` system calls. Finally, a name space has syntax — how a name is constructed — and semantics — the nature of the object a name identifies.

A UNIX file name, for example, is a sequence of slash-separated strings that identifies a byte stream. External conventions may provide further semantics: the file system contains objects that are not ordinary files. Simply by having ordinary file names, though, these objects have ordinary file properties such as protection. Examples are device files (`/dev/tty`), and in the Eighth Edition, processes (`/proc/01234`), faces (`/n/face/research/pjw`) connections to other processes (`/dev/pt/pt04`), and even synonyms for other files (`/dev/stdin`). Because they have regular names, existing tools can treat them as files when convenient, so standard software such as `open`(2), `read`(2), `cat`(1) and `ls`(1) immediately provide services for these objects that would otherwise require special handling.

Some of the Eighth Edition examples above have different names in other UNIX systems. `/dev/stdin` is often represented by the single character `-`, as an argument to commands, but this convention is capriciously followed; because it must be provided explicitly by each program, it is only available in some programs (compare the shell metacharacters for matching file names). Processes are represented by an integer process identifier, which is only meaningful to a few process-specific system calls. These calls implement their own protection mechanism, although the protection provided by the file system suits perfectly. Virtual terminals implemented using the multiplexed files of the Seventh Edition have no external name, so it is impossible to open one for IO (consider `write`(1)). On the other hand, a name in the file system is available, without prearrangement or special protocol, to any program. Also, clean syntax allows transparent extensions of semantics.

When machines are connected together, their name spaces may be joined to facilitate sharing files. If the name spaces have the same clean structure, that structure can be extended simply to describe the larger space. The Newcastle Connection names a file on another machine, say ucbvax, as `/../ucbvax/usr/rob/bin/cat-v`; the Eighth Edition notation is `/n/ucbvax/usr/rob/bin/cat-v`. In the former the name space has been extended by making it a subspace of a larger space, in the latter a new name subspace has been grafted on using `mount`(2), but in neither case has the *syntax* of names been changed; any program that understands a file name will understand a network file name without change, and relative names for files (those that don't begin with `/`) are unchanged. As a spectacular example, we might see on which machines wnj has a login by grepping through `/n/*/etc/passwd`, or even on those machines connected to ucbvax by `/n/ucbvax/n/*/etc/passwd`. These systems might have no global root, so meaning of an absolute name may become ambiguous because of the presence of multiple reference points. In fact, there might be no single point to which all names can be fixed. In practice, though, this ambiguity is unimportant.

Unfortunately, not everyone chooses naming conventions in accord with these (implicit) guidelines. An easy target is VMS, where our canonical file might be called `UCBVAX::SYS$DISK:[rob.bin]cat_v.exe;13`. The VMS file naming scheme provides a distinct syntax for each level in the name: `UCBVAX::` is a machine; `SYS$DISK:` is a disk (actually a macro that expands to a disk name such as `DUA0:`); `[rob.bin]` is a directory; `cat_v` is a file 'base' name; `.exe` is a file 'type'; and `;13` is a version number. This syntax is analogous to programming languages; consider a C expression such as `*strct[index].field->ptr`. If `*` were postfix and `/` the only dereferencing operator, the expression might be written `strct/index/field/ptr/`. Functionally-minded programmers might use the notation `contents(ptr(field(index(struct))))`. (A single character cannot be used in C because it could not distinguish `X[Y]` and `X->Y`, with `X` a structure pointer and `Y` an integer or structure element respectively, but this ambiguity could be eliminated in a different language.) C and VMS use syntax to distinguish the types of the components of a name; the UNIX file system instead deliberately hides the distinctions. Aside from the obvious advantages such as simplicity of syntax and the usurping of only a single character, the uniformity also makes the name space easier to manipulate: the `mount` system call aliases a disk and a directory.

VMS has no true name space manipulation operator. Although one could construct one, it

would be limited in scope: how could a disk be mounted at the VMS equivalent of `/usr/src` when disks are always before directories in the name? Instead, VMS has macros like `SYS$DISK` to hide the manner in which the space is assembled, and even to provide the concept of a local name by automatically inserting an expanded macro before an unqualified name. The problems with dynamic evaluation of macros are well known; for example, the VMS equivalent of `chdir` sets the default prefix for file names, but the prefix will only be evaluated and so checked for validity when a file name is interpreted, which may be arbitrarily and confusingly long after the prefix was set. Also, these local names are not really local at all, but rather implicitly prefixed by a string that binds them to a root of the name space. This implies that all names are always attached to some root, and therefore if the root changes, the name must also change, invisibly. (In fact, the default prefix macro is handled in a special way, because directories are not constructed by simple concatenation; subdirectory `[bin]` in directory `[rob]` is named `[rob.bin]`.)

Another problem with VMS names is that one cannot do the equivalent of grepping the VMS password files on various machines with `*::SYS$SYSTEM:SYSUAF.LIS`; the `*` operator doesn't apply to that portion of a name. This is an example of the general problem that whenever the name syntax is changed all programs that interpret names must be modified. More subtly, although if ucbvax were a gateway we could access files on a distant machine as `UCBVAX::KREMVAX::file`, it is only because the semantics of `::` explicitly permit such access. The `::` operator is implemented by passing the string after it to the remote machine, but first checking it for syntactic validity, so the syntax checker must have special code to admit multiple `::`'s.

The Cedar file system has a uniform naming syntax, just like UNIX file names, except that the version number of a file is separated from the file name by an exclamation mark `!`. The implementers apparently thought that version numbers are fundamentally different components of file names and therefore deserved different syntax. But the change in syntax requires new rules to define the meaning of file names. A good test of naming schemes is whether arbitrary names constructed by the syntactic rules make intuitive sense without new semantic rules being created for their interpretation. In the Cedar file system, `/usr/rob/bin/cat-v!3` is clearly version 3 of `cat-v`, but what is `/usr/rob!3/bin/cat-v`?

Even our friends sometimes make mistakes. The IBIS remote file system on 4.2BSD names a remote file as `ucbvax:file`. Many programs don't understand this syntax; we are forced to change the shell if we want to make `*:file` behave as we expect, because the shell expects a slash to separate name components. Worse, by changing the syntax, the implicit semantics of the original naming scheme is lost. In the Eighth Edition name `/n/ucbvax/file` it is obvious what `file` refers to: a file in the root directory of ucbvax. But what is it in `ucbvax:file`? It *might* be a file in the root, but it isn't. It is a file in the *home* directory on the *destination* machine (ucbvax) of the user invoking the name on the source machine (unless it begins with `/`); its meaning depends on who is asking. The extra semantics of `:` complicate attempts to patch the syntactic problems. We might try creating a symbolic link `/n/ucbvax` that evaluates to `ucbvax:`, but `/n/ucbvax/file` still points to a file in someone's home directory, and `/n/ucbvax/usr/wnj/file` refers to `/usr/wnj/usr/wnj/file`. If the link evaluates to `ucbvax:/`, things work as expected, but (we note without regret) the slash-less form of IBIS naming is made unavailable.

Part of the problem in the IBIS file system is that it is implemented outside the name space. By using a variant of `mount(2)`, the Eighth Edition file system guarantees that the syntax and semantics of names are free of surprises. For example, it is clear what `/n/ucbvax/n/kremvax/file` refers to, but what about `ucbvax:kremvax:file`? Where does `kremvax:file` get interpreted?

There are other ways to interpret file names like `ucbvax:file`. When using `uucp` to copy a local file to a remote machine, the name `ucbvax!file` refers to the file on ucbvax whose name is `file` prefixed by the current directory on the *source* machine. The prize goes to DECNET, however: `ucbvax::file` refers to `file` in the home directory of the 'default network user' on the destination machine, and `ucbvax"wnj password"::file` refers to `file` in wnj's home

directory (yes, the password is in clear text).

In summary, there are some guidelines for constructing naming conventions, particularly for objects in a network. There should be both relative names and absolute names. Relative names are actually more important because, among other reasons, the root of the name space may be unknown or non-unique. The syntax should be clean and uniform; every new syntactic rule requires at least one, and usually many, semantic rules to resolve peculiarities introduced by the new syntax. If the name space is a tree or any other kind of graph, a single character should be used to separate nodes in a name. If these guidelines are followed, names of objects in a network of machines will be easy to construct and interpret; difficult problems of networking will be completely hidden to the users and programs accessing objects in the network. If they are ignored, both users and programs must be aware of and understand the details of naming locally, globally and everywhere in between.

So far our examples have been of file names in file systems, but the same principles of good names apply to the names given to recipients of electronic mail and other inhabitants of computer networks. Since names constructed by our guidelines can name an arbitrary file, with arbitrary contents, the rules of simple naming are sufficient to name anything at all. It is interesting to see how well the guidelines are applied in practice.

Mail sent by UUCP is addressed by names parsed from left to right: `place-1!place-2!...!final-place!user` is a relative name that uses the one special character ! to separate components. The interpretation is simple, uniform, and not necessarily tied to routing.

The state of network naming outside the UUCP community is somewhat more complex. To deal with the problems that developed as more networks began attaching to the ARPANET, the concept of a 'domain,' generalizing 'host,' was introduced. The idea is that rather than a route through a set of hosts, a name in the network contains a sequence of subdomains that form an unambiguous path through an organizational hierarchy, prefixed by a name understood in the innermost domain. New concepts need new syntax, someone thought. The syntax for domains is a string of identifiers separated by dots, as in wnj@ucbvax.world.flat.BIG. In the so-called standard (as of August 13, 1982; it changes underfoot) the relevant part of an address is `local-part@domain` where both the local part and the domain are dot-separated lists of words. The local part can be anything that the first domain to the right of @ understands, while the domain string has a clean and standard interpretation. How well do these names follow our rules?

First, according to RFC 882 ("Domain Names – Concepts and Facilities"), the domains are all absolute. The dot signifying the root of the hierarchy is implicit at the right of the list of names, which makes it impossible to connect disjoint name spaces with this scheme since all interpreters of names must know all names at the top level of the hierarchy. Also, for backwards compatibility, RFC 822 ("Standard for the Format of ARPA Internet Text Messages") allows all but the leftmost of the domain names to be elided, since "specification of a fully qualified address can become inconvenient."

Second, there are at least two special characters, '@' and '.', although the @ serves no purpose. The only legal way of interpreting RFC 822 addresses is to deal with the rightmost domain name, and pass the rest on to that domain. This stops at the leaves of the domain tree, or the @, which is the same thing.

Finally, the standard requires 'registered' domain names: all the names that occur as domains in valid names must be registered before use, thus arrogating to ARPA Internet administration the authority to legislate naming. As a result, the whole thing is encompassed in a closed society and there are very few registered names. So much for internetworking.

Let us examine a typical Internet name:

IJQ3SRA%UCLAMVS.BITNET%SU-LINDY@SU-CSLI.ARPA

This is the name of user IJQ3SRA on machine UCLAMVS, accessible through BITNET from machine SU-LINDY, which is known to SU-CSLI on the ARPANET. There are obviously at least two domains in this name, `BITNET` and `ARPA`, but only one syntactic domain. Instead of using the

domain scheme, the gateway service between BITNET and ARPANET was made explicit in the name, requiring the invention of a new syntax character (%) which is translated to @ at the gateway, because ARPANET names can only contain a single @. A more rational standard name would be

IJQ3RSA.uclamvs.su-lindy.su-csli.bitnet.arpa

but that wouldn't work, even were the two Stanford sites separated by @ instead of a dot, because BITNET is not a registered name. If it were, one would omit `.su-lindy.su-csli`. Also note that the local part of the name above contains source routing — a path specified in the address by the originator of the message — despite the intention of domains to avoid routing. RFC 822 has an alternate syntax that allows the specification of routes by introducing the three new characters <, : and >, and rendering the % unneeded. (We nearly leave out mention of the use of lower and upper case, except to observe that the local part is case sensitive and the domain part is case insensitive, except that all 1024 case variants of the reserved local part 'postmaster' are legal and equivalent.)

What is going on? Basically, despite the words in the standard about hierarchy, the domain space is completely flat, so the local parts of the names carry source routing and domain transitions explicitly. To worsen matters, machines that advertise adherence to the standard in fact do not; instead the name translations that occur at gateways (such as converting @ to % and rearranging the components) are at best *ad hoc*. Names like poor IJQ3SRA%UCLAMVS's above are simply not following the rules.

No one pays any attention to the standard as long as the software keeps delivering mail. This means that a mail transmitting program in practice must understand the details of local names outside its domain, to the extent that constructing a network mailer is a research topic in heuristic programming.

New syntactic features will be invented to solve new problems, and someday we will have to interpret names even more complicated than

@cmu-cs-pt.arpa:@CMU-ITC-LINUS:dave%CMU-ITC-LINUS@CMU-CS-PT

Doug McIlroy has observed that

> ... bad notations can stifle progress. Roman numerals hobbled mathematics for a millennium but were propagated by custom and by natural deference to authority. Today we no longer meekly accept individual authority. Instead, we have "standards," impersonal imprimaturs on convention. Some standards are sound and indispensable; some simply celebrate bureaucratic littleness of mind. A harvest of gimmicks to save appearances within the standard has grown up, then gimmicks to save the appearances within the appearances. You know how each one got there: an overnight hack to paste another tumor onto a wild cancerous growth. The concern was with method, regardless of results. The result is extravagantly worse than Roman numerals: you can't read the notation right to left or left to right. As an amalgam of languages, it can't be deciphered by a native speaker of any one of them, much as if we were to switch at random places in a number between Roman and Arabic signs and between big-endian and little-endian order. But now that it all "works" — at least for the strong of stomach — the tumors themselves are being standardized.

The UNIX community has a clean, attractive naming scheme. The ARPA Internet community doesn't. Nonetheless, the ARPANET is influencing names within the UNIX community rather than the other way around. We are not proposing that ARPA adopt UNIX file system naming, we merely ask they they adopt and enforce a simple, sensible scheme. There is a precedent for world-wide names and addresses: through the middle of the 19th century, it became more and more difficult to handle international mail, until the International Postal Convention of 1875 established the standards that still form the foundation of the modern postal service.

It is hard to imagine organizations less likely to cooperate than hostile governments, yet a letter addressed in a form and alphabet locally understood can be sent anywhere in the world. Ignorance of the standard Iranian form of an address doesn't cut Iranian citizens off American

mailing lists, because the USA and Iran (and every other pair of countries) have rules about how mail between the countries is handled. Moreover, users of the mail system don't know the rules, only the post offices do.

The problem for electronic mail is smaller, simpler and surely solvable. RFC 822, RFC 882 and their implementation, however, are not the solution. They represent the unilateral imposition of a deficient standard that is polluting those communities that have comprehensible naming schemes.

I fled, and cry'd out "Death";
Hell trembled at the hideous name, and sigh'd
From all her caves, and back resounded, "Death."

- Milton, Paradise Lost

Australian Unix†-Systems Users' Group
1985 Winter Meeting, August 26, 27
University of Queensland

ABSTRACTS

Experiences with Communications Between UNIX and VMS‡ Systems

Peter Wishart,
Department of Computer Science,
Australian National University.

This talk will focus on communication between VAX/VMS systems and UNIX systems using Internet and SMTP. A locally developed implementation of SMTP for VMS, currently being used to give VMS users access to ACSnet mail will be discussed. Experiences using a locally developed implementation of the Internet Protocol (running on an ethernet) for VMS will also feature. The main thrust of this talk will be why we made the mistakes we did and how we intend to correct them in the medium to long term. It is hoped that this talk might convince someone (preferably not me) to do an implementation of ACSnet (nee SUN III) on VMS, and promote discussion about communications between VMS and UNIX (which seems to be a hot topic at the moment).

Parallel Procedure Calls

Ian Mathieson and Rhys Francis,
Department of Computer Science,
LaTrobe University.

The Concurrency Research Group at LaTrobe University is currently implementing a series of concurrent programming languages.

This paper discusses some implementation features of the first two of these languages - one providing a simple sequential language with procedure calls, the other providing parallel procedure calls and shared global variables.

In developing this second language, we have had to clearly define a parallel procedure call mechanism suitable for implementation.

Particular problems which arise from the semantics of parallel procedure calls require proper handling by the implementation. These include passing reference and value parameters, trapping errors and deaths of processes within the process tree, and process synchronisation.

The paper presents a solution to these problems based upon the inter-process communication (IPC) primitives provided by UNIX System V.

machdep.c: To Enhance Portability of Existing Code.

Greg Rose
Neology Ltd.

Often it is the case that large software packages exist which are less portable than one would hope. Some of these were written long ago, and some were written by other people, and some were written with a (possibly misguided) eye for efficiency. Many share a particular characteristic; they come with an include file describing either a set of characteristics of machines or a set of

† UNIX is a Trademark of AT&T Bell Laboratories.
‡ VAX and VMS are Trademarks of Digital Equipment Corporation

machines used to select such characteristics.

In this talk a C program is presented which interrogates the machine it runs on, and discloses some of the hardware's secrets. The output is selectable in a number of ways, and the format can be ready for use with C, make, the shell, humans, or sed. This program has been used successfully within Neology to make the porting and configuration of machine dependent code far more mechanical, with consequent saving of time for us and money for customers.

The program machdep.c is hereby inserted into the public domain, and will be transmitted free across ACSnet (or on magnetic media in certain formats if you send us the medium and a reply paid package) upon request.

Amdahl and UNIX

Geoff Fitzhardinge
Amdahl Australia Pty. Ltd.

Amdahl is well-known as a manufacturer of high-performance IBM-campatible mainframe processors, but over the last few years has also been involved in porting UNIX to systems in this class. Amdahl's current product, UTS, is a certified complete implementation of UNIX System V Release 2. It is being marketed by AT&T as well as Amdahl, and is available on all IBM-compatible systems. This paper will give some background to these developments, will outline some of the problems encountered in moving UNIX to the mainframe environment, and will review the present status of the project.

Using UNIX as a Teaching Tool

Derek A. Austin,
Department of Psychology,
University of Queensland.

A simple approach to Computer Aided Learning (CAL) under UNIX will be described. The goals of the software are pragmatic: to speed up feedback to students on their answers to statistics tutorial exercises and to save tutors from tedious marking. The two major components of the system are a student shell, called **slabsh**, and an evaluation program called **quizzle**. The advantages and disadvantages of our approach will be discussed and the potential of UNIX operating systems for future CAL development will be explored.

Benchmarking with MUSBUS

Ken. J. McDonell,
Department of Computer Science,
Monash University.

Unfortunately, not all UNIX implementations are of similar quality, even when identical hardware is involved. Outside the raw hardware speed and capacity, UNIX performance under constant load is very sensitive to the quality of the C compiler, kernel implementation and tuning parameters, filesystem structure and the filesystem-to-device mapping (i.e. the allocation of critical file systems across the available spindles).

Attempts to measure performance by simple tests may yield grossly misleading predictions of total system performance. Some UNIX implementations have even been specifically tuned to produce better comparative performance against some of the common simple benchmark tests. Consequently a broader evaluation strategy is required in an attempt to measure performance delivered to timesharing terminal users.

The Monash University Suite for Benchmarking Unix Systems (MUSBUS) has been developed specifically for users with an awareness of hardware and software factors that can make a significant difference in UNIX performance. Given this proviso, MUSBUS

(a) may be used to highlight potential bottlenecks in a particular UNIX implementation,

(b) offers a performance testbed that can be easily configured to provide relative comparisons of performance for end users with a purchaser-specific processing profile,

(c) uses portable C programs that are in the public domain, and

(d) has been used by vendors and purchasers in deliberations over the acquisitions of systems with a cumulative value of several millions of dollars.

The presentation will describe the details of the MUSBUS implementation, and demonstrate how the results may be interpreted based upon a comparative analysis of the results obtained from benchmarking two dissimilar UNIX implementations based upon hardware of comparable raw speed.

Words, words, words

Jason Catlett and Bruce Ellis,
Basser Department of Computer Science,
University of Sydney.

Even though your confidence in the usefulness of a "Writer's Work Bench" may have been eroded by messages such as "no grammer errors found" (sic.), or the information that your paper can only be understood by a reader with 173 years of schooling, you may find some of the tools we describe here useful or interesting. Using the full text of on-line dictionaries, we are developing programs to correct spelling and find words, as well as a few exotic operations of interest only to crosswords fanatics and extremist Scrabble players. We also describe some tools for dealing with **troff**, which, like fire, is a wonderful servant but a cruel master.

Fear and Loathing in the UNIX Programming Environment

A savage journey to the heart of the UNIX dream

Bruce Ellis,
Basser Deparmtent of Computer Science,
University of Sydney

The industry is on side. UNIX is a good thing to be marketing, the Visicalc of 1984. I get phone calls from all sorts of businessmen wanting to be my friend just because I went to USENIX. There are thousands of UNIX boxes duelling for a place in my office. Unfortunately it seems difficult for any company to produce a UNIX system without introducing contagion. I am not preaching that Level-6 UNIX has all the functionality that any business application wants or needs. I am, however, concerned with the direction (or lack of direction) that modifications and *"enhancements"* are following. Choose a UNIX box off the shelf and you will experience fear and loathing.

Some contagion is tracked down and examples of a different approach to some client needs are presented. Apologies to Thompson (H.S., not K), Kernighan and Pike.

XROADS — A Small Scale Circuit Switcher.
(Version 1.0)

Tim Segall
Department of Computer Science
University of Queensland.

Xroads is a small scale, low cost Circuit Switcher with a maximum of 256 lines per switcher. This is suitable for a department or institution with several machines and a large number of terminals. For example, it will handle up to 256 lines running at 9600 bps, or a full duplex 500 Kbps connection between two network nodes and 200 lines at 9600 bps. Alternatively, a single

line can drive a large number of (simplex) slaves, for group demonstrations. Any line can be connected to any other line (including itself).

All critical system information is stored in electrically eraseable programmable ROMs (EEPROM), and protected by checksums.

Added to these hardware capabilities is a comprehensive software interface which provides both user and administrator with a wide range of facilities. For example, Xroads can establish a connection (either simplex or duplex) between any two lines at any requested speed. It provides the administrator with the ability to restrict connection time, speed and target outlets, and tools for observing the status of any line or group of lines. "Automatic" connections requiring no interaction with the switcher can be defined for naive users. Likewise, "permanent" connections which persist across power failures can be used for long-term (yet flexible) links. Finally, hardware reconfiguration and testing are aided by power-up auto-configure and diagnostic code.

;login:

The USENIX Association Newsletter

Volume 10, Number 3 **August 1985**

CONTENTS

Call for Memorabilia for the 10th Anniversary Issue of ;login:

The next issue of *;login:* will be a special one to commemorate the 10th Anniversary of UNIX user group meetings. We need articles, anecdotes, recollections, historical documents, pictures, meeting announcements and programs, records of early meetings (especially those before 1980), records of awards, audio tapes – anything that might be of interest and/or help document the record.

Articles and letters to the editor with information, anecdotes, and histories of key milestones and personalities in the UNIX and USENIX world are particularly welcome.

Please send your contributions to Lou Katz at:

ucbvax!lou

or to the Association office.

When sending hard copy, please send originals if possible as they will reproduce better. Original materials will be returned unless you give permission for them to be kept in the Association's archives.

The closing date for submissions for the next issue of *;login:* is August 23, 1985

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NUZ

Newsletter of the
New Zealand Unix Systems User Group

ISSUE NUMBER 4

AUGUST 1985

EDITORIAL

Our second yearly meeting as a user's group was held in the delightful surroundings of Massey University at Palmerston North on May 26-28. This three day conference featured overseas speakers, local papers and a well supported exhibition from local computer representatives.

Papers ranged from almost blatantly commercial renditions of company profiles to very esoteric differences in operating system nuances and, somewhere in between, attendees had a choice to attend more practical examples of the use of the Bourne shell. Another theme was communications. Who is ready to use it? Tim Long from Australia introduced us to their ASCNET.

Monday evening's dinner was an experience, with Larry Crume of AT&T coming down with a dose of sheep jokes. We also were baffled at the choice of speaker at dinner time, but politeness and the excellent fare got the better of us.

The show was characterised by the strong presence of companies displaying their hardware and systems in adjoining exhibition spaces and some rooms were noted for the lack of airconditioning. (Who said modern systems don't need it?) Where were the C programmers? Does anyone using Unix other than me use C? [meet (place,topic,date,sex,starsign . . .)]?

I would like to thank those companies who went to great effort to participate at Massey because, for many people who attended, it is the only chance they get to sample the different wares available in the UNIX marketplace.

The conference certainly had a wide range of interests and speakers and will certainly be remembered for its variety. See the results of the survey included in this issue.

We all were given a seemingly very comprehensive benchmark result but it seems that the reviewers omitted a number of notable contenders. Who would believe anything could be up to date anyway with the rapid improvement of processor systems?

Touching security in this issue I'll try to help you sleep at night. Communications gives you a new dimension to think about.

From the Debuggers! "And again we helped the Japanese". Now it's impossible to start a shutdown on a Vax located in Japan (as some German students were tending to do.) They report than an oversight in the particular system allowed a user in Germany to start a shutdown "losing the results of batch jobs and other nice effects included".

WHAT'S IN THIS ISSUE?

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Preliminary Notice and First Call for Papers.
Australian Unix systems User Group.
1986 Summer Meeting.
University of Western Australia.
February 10, 11.

Introduction

The 1986 Summer Meeting of AUUG will be held by the Department of Computer Science at the University of Western Australia, Perth, W.A. on Monday February 10 and Tuesday, February 11, 1985. [Please note these dates have changed since those announced at 1985 Winter Meeting, Brisbane]

The key note speaker is yet to be announced.

Call for Papers

This announcement provides preliminary information concerning registration and accomodation and constitutes a first call for papers. Further information, and the final call for papers will be made in November.

Papers on subjects related to the Unix system, or Unix-like systems are called for this meeting. Abstracts should arrive at the University no later than last mail Friday, 13 December. Indication of intention by phone or mail is desirable as early as possible. Abstracts and papers should be sent to

AUUG Summer Conference.
Attention: Chris McDonald
Department of Computer Science
University of Western Australia
Nedlands. Western Australia 6008.

or (preferably) by electronic mail to:

ACSnet: auug@wacsvax.oz UUCP: ...!seismo!munnari!wacsvax.oz!auug
CSNET: auug@wacsvax.oz ARPA: auug%wacsvax.oz@seismo

Hardware Display

There will be a display of appropriate hardware and software in conjunction with the conference, and vendors/manufacturers are invited to demonstrate their products. For more information on participating in this display, contact

Damian Meyer,
Department of Computer Science,
University of Western Australia,
Nedlands, 6008
Phone: (09) 380 2282.

Registration

Registration will be $50, with a $10 discount for AUUG members, and a further $10 discount for early registration. To qualify for early registration, your payment must be received before Friday, January 17

Speakers will receive a free ticket to the conference dinner, while there will be a complete remission of registration fees for those speakers preparing papers (2000 words for publication) by Friday, 31 January.

Accomodation

Accomodation will be available at St. George's College at the cost of $20 per night. Accomodation is also available at Kings Park Lodge, approx. 3km from the University.

Double $40.50 (also share twin singles)
Single $34.50
Family $64 (2 units connecting doors)

Transport

Getting to Western Australia is expensive (getting anywhere in Australia is expensive). Various methods of getting here are ...

East-West Airlines.

Sydney,Ayres Rock,Perth and return	$469.00

Ansett Airlines

Sydney Economy return	$766.80
Sydney APEX return	$498.40
Melbourne Economy return	$682.40
Melbourne APEX return	$433.60

Railways (for net.railroads readers)

Melbourne Economy Discount return	$528.00
Melbourne Sit up (ugh)	$222.00

Sydney return rail fares exceed air fares.

Bus, and driving also, but it is a hard way to go.

APEX air fares would appear the cheapest, and should be availible around the time of the conference, but you should book soon to ensure a flight, you will also have to plan on being here for seven days. Standby and FLEXI fares are also availible, but they are less reliable.

What else ?

February is the warmest time of the year in Perth, the venue will be air conditioned and our beaches are among the best in the country, if you don't believe that, then come to the conference and see for yourself. Perth will be host to the World 12 Meter Championships throughout February, which promises to be as interesting as the Cup, without the Crowd. The University participates strongly in the Festival of Perth, with nightly outdoor film festivals, and indoor performances in its various theaters, as well as many other venues throughout Perth. Take a holiday, come see Perth, come to the AUUG conference.

Other Information

Further information will be posted to aus.auug in the near future, including registration forms. AUUG members will receive registration info via snail mail in due course. Non members, not participating in netnews, can contact Glenn Huxtable (see below), or mail auug@wacsvax to request registration forms and information.

For further information contact

REGISTRATION & GENERAL	Glenn Huxtable glenn@wacsvax.oz (09) 380 2878
PROGRAM	Chris McDonald chris@wacsvax.oz (09) 380 2878
ACCOMODATION	Frank O'Connor frank@wacsvax.oz (09) 380 2639
DISPLAY	Damian Meyer damian@wacsvax.oz (09) 380 2282

or via snail mail ...

Glenn Huxtable
Department of Computer Science
University of Westeren Australia
Nedlands 6009
Perth, Western Australia

Australian UNIX* systems User Group
(AUUG)

Membership Application

I, _____ do hereby apply for ordinary($50)/student($30)** membership of the Australian UNIX systems User Group and do agree to abide by the rules of the association especially with respect to non-disclosure of confidential and restricted licensed information. I understand that the membership fee entitles me to receive the Australian UNIX systems User Group Newsletter and I enclose payment of $_____ herewith.

Signed _____ Date _____

==========

Name _____

Mailing address for AUUG information _____

_____

_____

Telephone number (including area code) _____

UNIX Network address _____

I agree to my name and address being made available to software/hardware vendors YES ☐ NO ☐

==========

Student Member Certification

I certify that _____ is a full-time student at

_____

Expected date of graduation _____

Faculty signature _____ Date _____

==========

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** Delete one

Australian UNIX* systems User Group Newsletter (AUUGN)

Subscription Application

I wish to subscribe to the Australian UNIX systems User Group Newsletter and enclose payment of $_____ herewith for the items indicated below.

Signed _____ Date _____

☐	One years subscription (6 issues) available on microfiche or paper	$30.00
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☐	Back issues of Volume 3 (6 issues) available only on microfiche	$24.00
☐	Back issues of Volume 4 (6 issues) available on microfiche, some paper copies	$24.00
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☐	Subscribers outside Australia must pay more per volume to cover surface mail costs	$10.00
☐	Subscribers outside Australia must pay more per volume to cover air mail costs	$30.00

Name _____

Mailing address _____

_____

_____

Telephone number (including area code) _____

UNIX Network address _____

YES NO

I agree to my name and address being made available to software/hardware vendors ☐ ☐

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