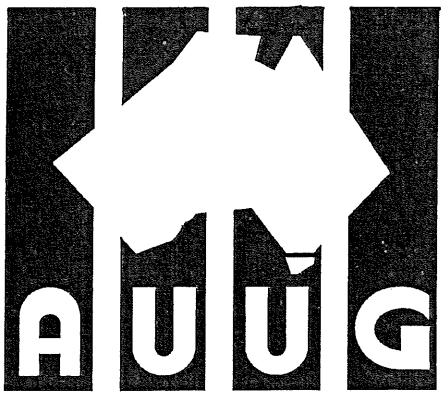

Australian UNIX systems User Group Newsletter

AUUGN

Volume 10, Number 5

October 1989

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The Australian UNIX* systems User Group Newsletter

Volume 10 Number 5

October 1989

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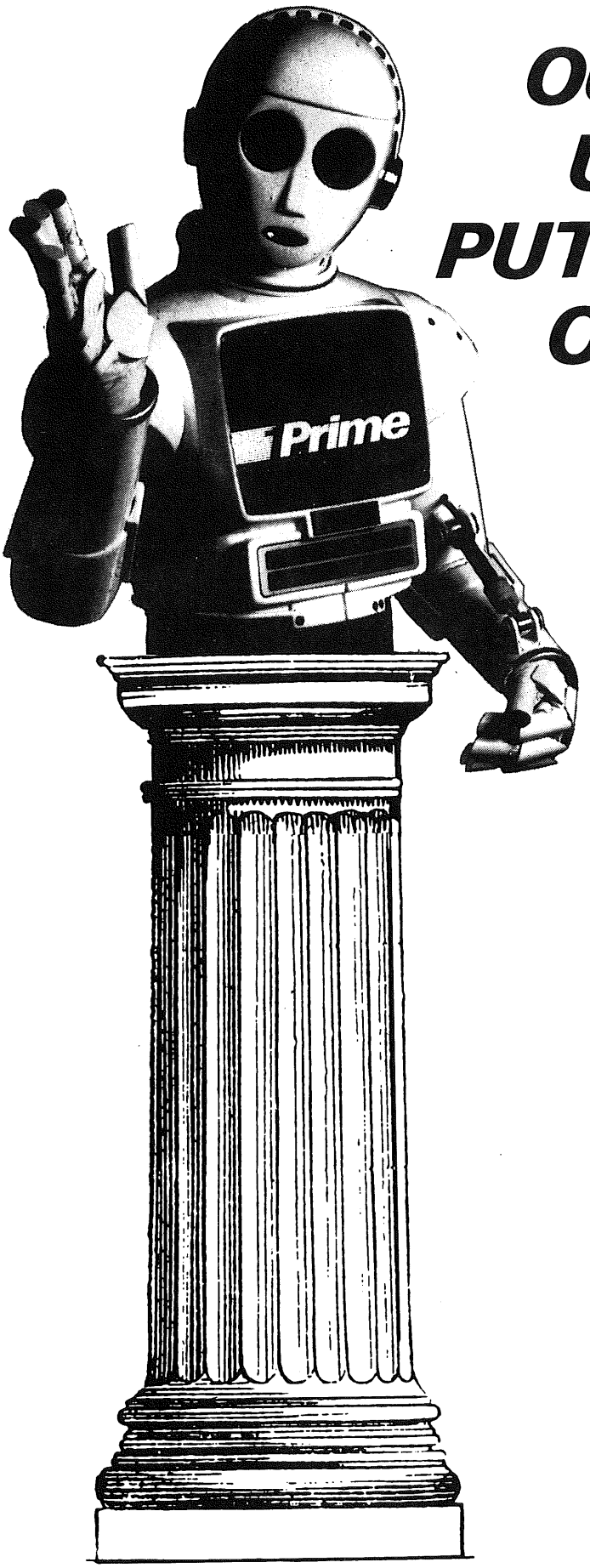
* UNIX is a registered trademark of AT&T in the USA and other countries.



OUR EXPANDED UNIX LINE-UP PUTS STANDARDS ON A PEDESTAL

One of the most important reasons you want any UNIX system is the standardisation it brings to your computing operations.

Prime is committed to industry standards and shared-resource computing.

From the compact 3 MIPS power of the new EXL MBX — the smallest member of our UNIX family — up to the mid-range and high-end EXL 1200 series which accommodates over 1,000 simultaneous users and can generate up to 120 MIPS.

And of course the familiar EXL 320 and 325 systems, highly rated by recent surveys into computer cost effiency over a 5 year period.

Prime's entire EXL family is built around the Intel 80386 microprocessor and works together via industry standard communications including NFS and X.25, SNA, and TCP/IP.

A principal and founding member of UNIX International and a member of X/OPEN, Prime is combining research with AT&T.

Prime

AUUG General Information

Memberships and Subscriptions

Membership, Change of Address, and Subscription forms can be found at the end of this issue.

All correspondence concerning membership of the AUUG should be addressed to:-

The AUUG Membership Secretary,
P.O. Box 366,
Kensington, N.S.W. 2033.
AUSTRALIA

General Correspondence

All other correspondence for the AUUG should be addressed to:-

The AUUG Secretary,
P.O. Box 366,
Kensington, N.S.W. 2033.
AUSTRALIA

AUUG Executive

Next AUUG Meeting

The AUUG90 Conference and Exhibition will be held in Melbourne from September 25th to September 28th 1990.
The venue has yet to be confirmed.

Further details will be provided in the next issue.

Editorial

Well, here we are then.

I suppose, this being my first issue of AUUGN, I should make some grand statement of new editorial policy. But I won't, because at this stage I have no grand ideas. In fact the majority of you, those who don't read the editorial and skip straight to the issue of *;login:* included later in the issue, will probably not notice a change at the helm.

For everyone else, i.e. those who are still reading, I would like to take just one more opportunity to thank John Carey not only for his own efforts as editor for the past three years, but for the help he has given me in preparing this issue and getting it to the printers.

It has been over a month since AUUG89, but the enthusiasm generated there still seems to be prompting some activity in the AUUG. Planning is well advanced for Regional Summer Conferences, and it looks like they really will go ahead this year.

Also a review of the constitution of AUUG Inc (as published in AUUGN Volume 10 Number 3) has prompted several regional user groups to petition the Management Committee to form Chapters of the AUUG. I would like to have it recorded here that SESSPOOLE in Melbourne was the first group to do so, presenting its petition to the Management Committee at the 1989 AGM.

So, I hope you enjoy this issue of AUUGN and will be inspired to send in copious articles for the next issue.

AUUGN Correspondence

All correspondence reguarding the AUUGN should be addressed to:-

David Purdue
AUUGN Editor
Labtam Information Systems Pty. Ltd.
43 Malcolm Road
Braeside Victoria 3195
AUSTRALIA

ACSnet: *davidp@labtam.oz*

Phone: +61 3 587 1444
Fax: +61 3 580 5581

Contributions

The Newsletter is published approximately every two months. The deadline for contributions for the next issue is Friday the 1st of December 1989.

Contributions should be sent to the Editor at the above address.

I prefer documents to be e-mailed to me, and formatted with troff. I can process mm, me, ms and even man macros, and have tbl, eqn and pic preprocessors, but please note on your submission which macros and preprocessors you are using. If you can't use troff, then just plain text please.

Hardcopy submissions should be on A4 with 30 mm left at the top and bottom so that the AUUGN footers can be pasted on to the page. Small page numbers printed in the footer area would help.

Come on, everyone, contribute! If the muse is upon you, and you have to write, but you can't think of anything to write about, give me a call and I'll throw some ideas at you.

Advertising

Advertisements for the AUUG are welcome. They must be submitted on an A4 page. No partial page advertisements will be accepted. The current rate is AUD$ 200 dollars per inside page. More

prominent positions are available but cost more. Contact the editor for details.

Mailing Lists

For the purchase of the AUUGN mailing list, please contact Tim Roper.

Back Issues

Various back issues of the AUUGN are available, details are printed at the end of this issue.

Acknowledgement

This Newsletter was produced with the kind assistance and equipment provided by Labtam Information Systems Pty Ltd.

Disclaimer

Opinions expressed by authors and reviewers are not necessarily those of AUUG Inc, its Newsletter or its editorial committee.

Letters To The Editor

From Dominic Dunlop
<domo%sphinx.co.uk@murtoa.cs.mu.oz>

As you may know, I am under contract to both the EUUG and Usenix to be a standards monitor for the ISO POSIX (JTC1/SC22/WG15) project. I am also working for X/Open on a project which aims to map the world of Information Technology standardization — to find the names and aims of the bodies involved, and how they relate to one another. An early result of this effort should be a directory of the bodies, which should help those interested in participation in the process of standardization to contact the correct bodies.

(At this point, I should stress that I am not speaking for X/Open in making the request which follows, nor am I making any undertaking on behalf of X/Open.)

It is mainly in connection with the X/Open project that I write on this occasion, although any information that I gain should also help me to do a better job on your behalf at the ISO POSIX meetings. (Information is power. Who said that?)

What I'm looking for is information on the infrastructure which supports standardization in the field of Information Technology (I.T.) in countries around the world. Each country has an official standards body — for example, DIN in Germany, JISC in Japan, and BSI in the UK — but below these bodies is a network of government organisations, industry groupings, professional associations, academic networks and user groups which feed into the standards process. Some of these links are formal — for example, where a national standards body accredits some other organisation to create particular standards on its behalf (as ANSI in the USA has done with the IEEE in the case of POSIX); some are informal, amounting to lobbying from a group with a specific interest. (The relationship between EUUG/Usenix and ISO is currently at this level.)

To give you some idea of what I'm after, here are some examples of bodies in the UK — my home territory: (This information looks better as a map of boxes connected with arrows, but, pending multi-media traffic on the net, I can't post that sort of thing.)

British Standards Institute
: National standards body; member body of International Organisation for Standardization (ISO) and the International Electrotechnical Commission (IEC)

Department of Trade & Industry
: Government department; responsible for I.T. policy; currently promoting adherence to standards, particularly in area of Open Systems Interconnection. Funds some industry participation in standards groups.

National Computer Centre
: Quasi-government body, charged with promoting the use of I.T.

Central Computer & Telecommunications Agency
: Government body responsible for the government's own I.T. purchasing policy. Maintains UK GOSIP (Government OSI Profile) subsequently adopted by the European Community.

British Computer Society
: Chartered professional body which has played an important part in the production of a few British Standards; not active in the areas of POSIX or data communications standardization.

Institute of Electrical Engineers
: Chartered professional body accredited by BSI to create standards; has not been involved in I.T. standardization, however.

ITUSA
: (Information Technology Users' Association) Lobby body funded by large users of I.T., and by DTI. Has shown considerable interest in POSIX, but has not made any real contribution.

Uniforum UK
: (Formerly /usr/group UK) Grouping of commercial users and suppliers of computer hardware based around the UNIX operating system. Has not played an active role in standardization. Affiliated to Uniforum (US).

Joint Academic Network

Body responsible for providing data links between higher education establishments. An early implementor of OSI-style protocols. Relationship to standards bodies unknown at this stage.

And so on... (I could go on at great and tedious length.)

May I ask you to help me in my quest for this type of local information within your own countries? Copies of written descriptive materials from the bodies in question would be welcome — ideally in English, although I can get other languages translated if necessary.

For each organisation that this search turns up, I need an address and telephone number, plus, if at all possible, the name of a contact person. (The latter helps a lot, as does a facsimile number and/or email address.) Should you need to use media other than email to get things to me, my details are as follows:

Dominic Dunlop
The Standard Answer Ltd.
4 St. Rumbolds Road
Wallingford
OXON OX10 0DL
UK

Telephone: +44 491 25425
Facsimile: +44 491 32002
Eunet: domo@sphinx.co.uk

Thanks in advance for any help that you can offer. Feel free to seek any clarification that you may need from me by email.

Dominic Dunlop
The Standard Answer Ltd

President's Letter

Greetings to new members of AUUG; this will be the first issue of the magazine to be produced after the AUUG'89 conference where many joined.

It was very pleasing to be present at the AUUG'89 conference and exhibition, and to observe the good reactions of the attendees of the conference, the exhibitors, and the off-the-street visitors to the exhibition itself — over 800 of them. I have even been stopped on the street and congratulated! (I'm surprised I was recognised as I was wearing a Bill Joy costume at the time.)

The success of AUUG'89 has caused a minor problem for the committee. Next year's event (predictably called AUUG'90) was already booked into a venue which was clearly too small for it. We have had to do some fast footwork, and are moving from the Southern Cross to the Eden-on-the-Yarra, (both in Melbourne).

We (in the person of Glenn Huxtable from the University of Western Australia) are deeply into the organisation of the summer AUUG technical conferences to be run in various venues around Australia. These conferences are intended to fill the need for dissemination of information regarding new technical developments and work in progress, rather than having the more commercial flavour of the larger annual meeting. There should be more details and a call for papers elsewhere in this issue.

Also, this is the first issue of the AUUGN to be under the direct editorial control of David Purdue of Labtam. I hope we will all be supportive of David in his new role, one of the more laborious volounteer tasks of the group, and I would also like to praise again the efforts of John Carey who has recently retired from the position.

Greg Rose
President

AUUG Incorporated

1989 Annual General Meeting

10th August, 1989
Hilton Hotel, Sydney

MINUTES

These minutes are subject to amendment at the next General Meeting.

The meeting opened at 17:10 with the entire committee and 89 members present. The President took the chair.

1. Apologies
   John O'Brien (Returning Officer).

2. Minutes of last meeting (15th September, 1988)
   A copy of the minutes of the previous meeting, being the 1988 Annual General Meeting, was projected onto the screen. Moved Russell McDonnel, seconded Trevor Hales **That the minutes of the previous AGM be accepted.** Carried.

3. Business arising from Minutes
   None.

4. Returning Officer's Report
   Chris Maltby reported on behalf of John O'Brien who was overseas. As published in AUUGN Vol 10 No 3, the results were:

President	Greg Rose
Secretary	Tim Roper
Treasurer	Michael Tuke
General Committee Members	Peter Barnes
	John Carey
	Pat Duffy
	Chris Maltby
Returning Officer	John O'Brien
Assistant Returning Officer	David Purdue

   87 votes having been received out of 357 ballots sent out.

5. President's Report
   The President, Greg Rose, reported that 1988/89 had been a Good Year for AUUG. There had been a large increase in membership, especially in the Institutional category. He moved a vote of thanks to John Carey, the retiring AUUGN Editor, which was carried by acclamation.

   Moved David Purdue, seconded Andrew Gollan **That the President's report be accepted.** Carried.

6. Secretary's Report
   The Secretary, Tim Roper, presented the report as printed in AUUGN Vol 10 No 5 [this issue].

There was discussion of the matter of secretarial assistance. Sunil Das said that EUUG imposed a surcharge of 40 pounds per member to pay for the Owles Hall service.

Moved Tim Segall, seconded Russell McDonnel **That the Secretary's report be accepted.** Carried.

7. Treasurer's Report
The Treasurer, Michael Tuke, presented the report as printed in AUUGN Vol 10 No 5 [this issue].

Moved James Worsley, seconded Ken McDonnel **That the Treasurer's report be accepted.** Carried.

8. Meetings in 1990
Glenn Huxtable volunteered to coordinate summer meeting in 1990.

The tentative details for AUUG90 were announced as 11 - 14 September at The Southern Cross, Melbourne. It was likely that this would be changed to a bigger venue.

There was discussion of the venue for AUUG91 and of whether the Sydney/Melbourne policy should be changed. Moved Ken McDonnel, seconded John Carey **That the committee be directed to prepare alternate budgets for a 1991 conference and exhibition in Sydney and somewhere else other than Melbourne.** Carried.

The President asked for a straw vote to indicate whether the meeting was happy with having Sydney/Melbourne winter meetings plus local summer meetings. The show of hands was 88 for, 1 against.

9. Next Annual General Meeting
Moved Tim Roper, seconded John Carey **That the next Annual General Meeting of AUUG Inc. be held at the Southern Cross Hotel, Melbourne, on the 13th September, 1990 at 17:00.** Carried unanimously.

10. Other Business
None.

The President closed the meeting at approximately 18:30.

Secretary's Report 1988/89

Timothy Roper
Secretary

AUUG Incorporated

1. Successes

The financial year 1/6/88 to 31/5/89 could be described as successful according to the following metrics.

1.1. Conference and Exhibitions

These events provide the high point of the AUUG calendar and 1988 was no exception. The move up market in venue and the three day format were well received by those attending (though such a sample is inherently biased). We can be pleased at having a growing event in an industry where not all shows are doing so.

On the attendance of nearly 300 in Melbourne in 1988, planning is underway for 400 to 500 in Sydney in 1989.

1.2. Memberships

Membership has been increasing at an increasing rate, especially in the Institutional category. This appears to have resulted in part from special offers and in part from the increasing use of UNIX* operating systems in the commercial world. The AUUGN print run is now approaching 500. As at 31/5/89, membership numbers and the approximate changes over the 12 month period were as follows.

Class	Number	%Change
Ordinary	296	+50%
Institutional	70	+95%
Student	10	+150%

1.3. Special Offers

There were two new offers made by AUUG to its members during the year. The first was the *Inauugral Software Distribution*, some 200 megabytes (compressed) of source code. Although originally obtained as a timely source of the X Window System, Version 11 Release 3, it was also popular for the miscellaneous software that came with it. The master tape was financed by AUUG and copies in various formats were distributed to members on a no-cost basis. Some 36 copies of all or part of the software were made and shipped between November 1988 and May 1989.

The other new offer was the bulk purchase of books from O'Reilly and Associates. Despite the popularity of the books there doesn't appear to be a retail outlet in Australia that actually stocks them. A first order on behalf of 34 members was placed with a value of $A10,117 was placed early in 1989 with the first books being received by members in March. A second order of at least 400 copies is about to be made on behalf of members who did not respond in time for the first order. Both orders have been substantially underwritten by AUUG. Payment in advance was not required though was received in some cases. Unfortunately this will eventually lead to some members waiting over six months between paying for and receiving books.

* UNIX is a trademark of AT&T.

The bulk purchase of USENIX Proceedings has continued. By bulk ordering on spec we can make them available ex-stock to members within weeks of the event but at surface mail cost.

2. Failures

For the second time, summer meetings were mooted but did not eventuate (though they got much closer to doing so this year.)

3. The Future

I feel obliged to report my opinion that the status quo cannot last much longer. The popularity of the software and book offers, the increasing membership and the burgeoning conferences seem to me to show that the demand for services that the AUUG has traditionally offered is exploding. There are areas where AUUG has never been involved in the Australian UNIX user community but could choose to become so. The time to consider full time staff with the associated increase in the range, quality, continuity and cost of services, is near. Every member could start by considering whether they would like to pay, and receive, more and reconsider what they expect to get from membership of AUUG.

4. Acknowledgements

John Carey has kept AUUGN up to his high standards despite a poor contribution rate by members; Robert Elz has continued to maintain the membership database despite promises by others including me to relieve him; Colin Hall of Labtam threaded all those software distribution tapes; and David Purdue survived an avalanche of Nutshell books. Frank Crawford, Peter Barnes, Greg Rose and Pat Duffy have been working to make AUUG89 bigger and better and I look forward to enjoying it with you.

Treasurer's Report 1988/89

Michael Tuke
Treasurer

AUUG Incorporated

Following is the financial statement for the financial year to May 31st 1989, together with the auditor's report.

These reports were presented to the Annual General Meeting of AUUG Inc on 10th August.

The financial statement shows a useful operating surplus, despite a small loss on the AUUG88 Conference and Exhibition.

The auditor's report may appear to be unfavourable. This is most definitely not the case. This is the first time the financial statement has been prepared by a profeesional, outside service, and the first time since the Incorporation of AUUG. The conditional approval of the statement is simply because of insufficient documentation of where AUUG's accumulated assets came from.

The current financial outlook of AUUG Inc continues to be sound, with a good profit likely from AUUG89 Conference and Exhibition.

AUDITORS REPORT

TO THE MEMBERS OF AUUG INCORPORATED

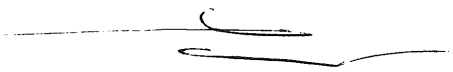
We have audited the financial statements, namely the Profit and Loss Statement and Balance Sheet in accordance with Australian Auditing Standards.

In our opinion limitation on the scope of our work was imposed when the association was unable to present to us a Balance Sheet as at 31st May, 1988 and consequently we did not have a starting point. The outcome of this situation is that the accumulated profits presented on the balance sheet was arrived at after discussion with association members and may not present as accurate account of previous years operations.

In our opinion, subjects to the effects on the financial statement of the above limitation, the financial statements present fairly the financial position of AUUG Incorporated at 31st May, 1989 and the results of its operations for the year ended in accordance with Australian Accounting Standards.

Date : 1st August, 1989. Firm : Nicol & Nicol - C.P.A.

Address : 230 York Street, South Melbourne .



STUART C. NICOL

AUUG INCORPORATION

PROFIT & LOSS STATEMENT

FOT THE PERIOD 1ST JUNE 1988 TO 31ST MAY, 1989.

CONFERENCE AUUG '88.

INCOME

Share of Conference Profits		12550.41
LESS: EXPENSES		
Advertising	3579.44	
Art Works	247.10	
Badges	1320.00	
Bank Charges	13.78	
Insurance	877.60	
Parking	14.00	
Photocopying	177.60	
Postage	96.82	
Printing & Stationery	49.00	
Press Release	475.00	
Travelling/Accomodation/Meals	5968.88	12819.22
AUGG 88 NET LOSS		$268.81

AUUG INCORPORATED

PROFIT & LOSS STATEMENT

FOR THE PERIOD 1ST JUNE, 1988 TO 31ST MAY, 1989.

** GENERAL **

INCOME

Memberships	41145.00
Nutshell Handbooks	3907.22
Open Look Specification	409.35
Usenix Proceedings - San Francisco	1288.00
Usenix Proceedings - San Diego	657.00
AUUGN/Back Issues/Subscriptions	685.00
Mailing List	2776.00
Interest Received - Chase	1528.30
Interest Received - C.B.A.	2563.87
	54959.74

LESS: EXPENSES

Bank Charges:		
- Credit Card	291.53	
- Government	58.72	
- General	96.54	446.79
Donations		200.00
Management Committee/Meeting Expenses:		
- Airfares	3331.00	
- Accomodation/Meals	355.50	
- Parking	63.55	
- Taxis, e.t.c.	203.10	3953.15
Membership Expenses:		
- Photocopying	326.16	
- Printing	104.22	430.38
Nutshell Expenses:		
- Postage/Freight	1502.71	
- Purchase Handbooks	5347.00	6849.71
Open Look Expenses:		
- Photocopying	383.60	
- Postage/Freight	41.15	424.75
Usenix Proceedings San Francisco		
- Postage	277.05	
- Purchase Proceedings	956.32	1233.37
Usenix Proceedings San Diego		
- Postage	192.49	
- Purchase Proceedings	1735.00	1927.49

AUUG INCORPORATED

PROFIT & LOSS STATEMENT

FOR THE PERIOD 1ST JUNE, 1988 TO 31ST MAY, 1989.

AUUGN:			
- Postage/Freight	338.85		
- Printing	29921.99	30260.84	
Mailing List			
- Photocopying	127.00		
- Postage/Freight	1382.57	1509.57	
AUUG 89			
- Freight	73.21		
- Postage of CFP	577.94	651.15	
Printing & Stationery - General		405.55	
Postage/Cartage/Freight - General		870.75	
Purchases - Software UUNet		156.11	
Purchases - Computing Systems Journal		1488.35	
Trademarks Registration		450.00	
			51257.96
GENERAL ACCOUNT NET PROFIT			$3701.78
AUUG'88 NET PROFIT (LOSS)			(268.81)
NET PROFIT			$3432.97

AUUG INCORPORATED

BALANCE SHEET

AS AT 31ST MAY, 1989.

ASSETS

CURRENT ASSETS

Cash at Bank - Ordinary Account	27000.40	
Deposit - Chase AMP	12000.00	
Deposit - C.B.A.	16832.57	
Debtors - Memberships	1080.00	
Debtors - San Diego Proceedings	90.00	
Debtors - Openlook	43.55	
Debtors - Mailing List	709.00	57755.52

INTANGIBLE ASSETS

Formation Costs	988.10
TOTAL ASSETS	$58743.62

LIABILITIES

CURRENT LIABILITIES

Bank Overdraft - AUUG 88 Account	164.09	
Sundry Creditors	10072.60	10236.69

ASSOCIATION FUNDS

Accumulated Profits	48506.93
TOTAL LIABILITIES & CAPITAL	$58743.62

SESSPOOLE

Who is SESSPOOLE?

SESSPOOLE is the South Eastern Suburbs Society for Programmers Or Other Local Enthusiasts.

What is SESSPOOLE?

SESSPOOLE is a group of programmers and friends who meet every six weeks or so for the purpose of discussing UNIX, drinking wines and ales, and just relaxing and socialising over dinner. Anyone who subscribes to the aims of SESSPOOLE is welcome to attend our meetings, whether they come from the South Eastern Suburbs or not. The aims of SESSPOOLE are:

> To promote knowledge and understanding of the UNIX system, and of similar or related computer systems; and to promote knowledge and understanding of red and white wines, and of similar or related wines.

SESSPOOLE is also the first Chapter of the AUUG to be formed, and its members are involved in the staging of the AUUG Summer'90 Melbourne Meeting.

When is SESSPOOLE?

The next meeting of SESSPOOLE is on the 1st of November, 1989, at 7pm.

Where is SESSPOOLE?

The next meeting of SESSPOOLE will be held in the bistro of the Oakleigh Hotel, 1555 Dandenong Road, Oakleigh.

Want to know more?

To find out more about SESSPOOLE and SESSPOOLE activities, contact either David Purdue *<davidp@labtam.oz>* or John Carey *<john@labtam.oz>*. Their phone number is 587-1444 (bh). Or look for announcements in the newsgroup **aus.auug**.

WAUG
Western Australian UNIX systems Group
PO Box 877, WEST PERTH 6005

Western Australian Unix systems Group

The Western Australian UNIX systems Group (**WAUG**) was formed in late 1984, but floundered until after the 1986 AUUG meeting in Perth. Spurred on by the AUUG publicity and greater commercial interest and acceptability of UNIX systems, the group reformed and has grown to over 70 members, including 16 corporate members.

A major activity of the group are monthly meetings. Invited speakers address the group on topics including new hardware, software packages and technical dissertations. After the meeting, we gather for refreshments, and an opportunity to informally discuss any points of interest. Formal business is kept to a minimum.

Meetings are held on the third Wednesday of each month, at 6pm. The (nominal) venue is "University House" at the University of Western Australia, although this often varies to take advantage of corporate sponsorship and facilities provided by the speakers.

The group also produces a periodic Newsletter, **YAUN** (Yet Another UNIX Newsletter), containing members contributions and extracts from various UNIX Newsletters and extensive network news services. **YAUN** provides members with some of the latest news and information available.

For further information contact the Secretary, Skipton Ryper on (09) 222 1438, or Glenn Huxtable (glenn@wacsvax.uwa.oz) on (09) 380 2878.

Glenn Huxtable,
Membership Secretary, **WAUG**

AUUG Regional Meetings Summer'90

During February 1990, the AUUG will sponsor a series of one day technical meetings in regional centres throughout Australia.

The purpose of the regional summer meetings is to supplement the AUUG winter conference by providing an informal forum for the presentation of technical issues of interest to programmers, system administrators and experienced users.

Final Call For Organisers

Summer meetings are currently being planned for:

Perth	Fri 2nd Feb	**Melbourne**	Tue 6th Feb
Canberra	TBA	**Sydney**	TBA
Brisbane	TBA	**Townsville**	TBA

Organisers for additional meetings in South Australia, Tasmania, the Northern Territory (and possibly Brisbane) are still required. Interested parties should contact the conference coordinator as soon as possible.

Preliminary Call for Speakers

Regional calls for speakers will appear as soon as the above dates and the invited speaker are finalised. Talks are expected to be of a technical nature on UNIX-related issues of research, development and application. Intending speakers should contact their regional chairperson:

Perth	Chris Macdonald	*chris@wacsvax.uwa.oz*
Melbourne	Stephen Prince	*sp@labtam.oz*
Canberra	Ross Hand	*rossh@neccan.oz*
Sydney	Greg Rose	*greg@softway.sw.oz*

For other regions, or additional information, please contact the conference coordinator.

Further information, and regional calls for speakers, should appear in the news group **aus.auug** in the near future.

Glenn Huxtable
glenn@wacsvax.uwa.oz
coordinating AUUG Summer'90

AUUG Institutional Members

ANL Limited
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Alcatel STC Australia
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Alliance Computer Centre Pty. Ltd
Apple Computer Australia
Apscore International Pty Ltd
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CSIRO Division of Manufacturing Technology
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DMR Group
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Dept of Industry, Technology and Resources, Victoria
Dept of Lands - Central Mapping Authority
Digital Equipment Corporation (Australia) Pty. Limited
Earth Resource Mapping Pty Ltd
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Flinders University Discipline of Computer Science
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Gould Electronics Pty Ltd
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ICL Australia Pty. Ltd.
IPS Radio and Space Services

AUUG Institutional Members

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Olivetti Australia Pty Ltd
Olympic Amusements P/L
Overseas Telecommunications Corporation
Performance Systems
Prentice Computer Centre
Prime Computer of Australia Ltd
Pyramid Technology Corporation
Q. H. Tours Limited
Queensland Department of Mines
RMIT Computer Centre
Racecourse Totalizators Pty Ltd
Roads and Traffic Authority NSW
SEQEB
Sigma Data Corporation Pty Ltd
Sola International Holdings Ltd
South Australian Institute of Technology
Sphere Systems Pty Ltd
State Bank Victoria
State Bank of NSW
State Library of Tasmania
Sugar Research Institute
Sun Microsystems Australia
Swinburne Institute of Technology
Sybase Australia Pty Ltd
Tattersall Sweep Consultation
Telecom Network Engineering - C.S.S
University of Adelaide
University of Melbourne
University of New England
University of New South Wales
University of Technology Sydney Computing Services Division
University of Wollongong
Vicomp
Wang Australia Pty Ltd
Wyse Technology Pty. Ltd.
Yartout Pty Ltd

Call For Speakers

AUUG – Summer '90 (Victoria)

Australian Unix systems User Group

Victorian Summer Meeting 1990

February 6 1990, Clayton, Victoria

The Victorian 1990 Summer regional meeting of the Australian UNIX systems User Group will be held on Tuesday 6th February 1990 at Monash University, Clayton, Victoria.

The theme of the meeting is: *UNIX – the Universal Environment.*

The purpose of the regional summer meetings is to suppliment the AUUG winter conferences by providing an informal, technical forum for the presentation and exchange of current work in the area of UNIX. It is expected that the content of these meetings will provide technical issues which are relevent to programmers, system administrators and the experienced users.

Papers:

Talks in all areas of UNIX–related research and development are solicited for the program. Speakers have the option of submitting a formal paper on their talk, with all the papers received being published in the AUUG newsletter. Speakers making a presentation will receive complimentary admission. Some suggested topic areas include, but are not limited to:

- Kernel enhancements
- Architectures and Compilers
- UNIX standardization
- Development tools
- User interfaces
- Performance analysis
- Networking
- System administration
- UNIX security

Acceptance of a talk will be based *soley* on the abstract as submitted. A 100 word abstract and any final papers should be submitted to the programme committee chair:

Stephen Prince	Phone:	(03) 5871444
AUUG–SUMMER90	Fax:	(03) 5805581
Labtam Information Systems Pty. Ltd.	Telex:	LABTAM AA33550
43 Malcolm Road	ACSnet:	sp@labtam.oz
Braeside, Vic. 3195		

Final papers may be sent via electronic mail and formatted using *troff* and any of the standard UNIX macro and preprocessor packages (–ms, –me, –mm, pic, tbl, eqn) or with TeX or LaTeX. Alternatively, final papers may be submitted as a laser printer produced camera ready copy on A4 paper with 30mm margins left at the top and bottom. Intending authors unable to produce either of these forms are requested to contact the programme committee chair.

Important Dates:

Expression of Intent:	Monday 30th October
Abstracts Due:	Monday 4th December
Acceptance Letter Sent:	Monday 11th December
Final Papers Due:	Friday 12th January
Meeting:	Tuesday 6th February

Conference Announcement

AUUG 90

Australian UNIX* systems User Group

Conference and Exhibition 1990

September 25-28 1990, Melbourne, Australia

Summary

The 1990 Conference and Exhibition of the Australian UNIX systems User Group will be held at the World Congress Centre, Melbourne, Australia. Tutorial sessions will be held on Tuesday the 25th and the conference proper from Wednesday the 26th to Friday the 28th September 1990.

The conference theme is:

UNIX the Computing Platform for the 90s

Venue

The World Congress Centre is a new purpose built convention and exhibition centre located near the Yarra River. It is within the Central Business District with easy access to transport.

This is a major step up for the AUUG in the quality and size of venue and is in step with the growth of the UNIX operating system.

This Conference and Exhibition is to be held during the week before the VFL Grand Final and gives attendees the chance to attend Melbourne's Sporting Event.

Conference

The Conference held over three days will provide UNIX users a chance to hear speakers from Australia and overseas speak on a wide range of topics including the latest developments and uses of the UNIX operating system.

The conference dinner and the conference itself provide an unique opportunity to meet other people in the UNIX community.

Exhibition

The exhibition will be held in an attractive and well serviced venue, and is supported by major UNIX vendors. It is held in conjunction with the AUUG 90 conference which ensures exhibitors suitable contact will be made with potential buyers of their product.

Interested Exhibitors should contact ACMS promptly to ensure they obtain the optimum location to display their product. The ACMS contact address is given below.

Conference Secretariat

For all enquiries regarding registration, accommodation, and the Exhibition:

AUUG 90 Secretariat			
c/o ACMS	Telephone:	International	+61 2 332 4622
26 Hopewell Street		National	(02) 332 4622
Paddington NSW 2021	Facsimile:	International	+61 2 332 4066
AUSTRALIA		National	(02) 332 4066

Please Note Change in venue and dates from previous announcements

Call For Papers

AUUG 90

Papers

Papers are invited on topics which will interest an audience of either Research, Technical, Industry, or Commercial UNIX users.

Some suggested topics are:-

- Future Directions
- Standards
- Networking
- Security
- Project Management
- Productivity Tools
- Database
- System Administration
- User Interfaces
- Windowing Systems
- Real Time Systems
- Multiprocessing

Papers that provide broad overviews, technical review, and/or descriptions of new and interesting work in the the subject areas are sought. Papers that describe current Work in Progress, and papers on other topics not listed but relevant to the UNIX user community are also welcome.

Authors of each paper accepted will receive ONE complementary admission to the conference and the dinner.

AUUG will again hold a competition for the best paper by a full time student at an Australian educational institution. The prize for this competition will be an expense paid return trip from within Australia to the conference to present the winning paper. A cash prize in lieu of this may be made at the discretion of AUUG. Students should indicate with their abstract whether they wish to enter the competition. AUUG reserves the right to not award the prize if no entries if a suitable standard are forthcoming.

A special issue of the group's newsletter AUUGN containing the conference proceedings will be printed for distribution to the attendees at the conference and mailed to AUUG members who do not attend.

A 1000-2000 word extented abstract is required in early February 1990 which describes the nature of the paper and a summary of conclusions and/or results.

Acceptance of papers will be based on an extended abstract and will be subject to receipt of the final paper by the due date. The Programme Committee Chair reserves the right to withhold final acceptance until the final paper is received. Abstracts and final papers should be submitted to:-

John Carey	Phone:	International	+61 3 587 1444
AUUG 90 Programme Committee Chair		National	(03) 587 1444
Labtam Information Systems Pty. Ltd.	Fax:	International	+61 3 580 5581
43 Malcolm Road		National	(03) 580 5581
Braeside Victoria 3195	Telex:	LABTAM AA335500	
AUSTRALIA	Internet:	john@labtam.oz.au	
	ACSnet:	john@labtam.oz	
	UUCP:	uunet!munnari!labtam.oz!john	

Call For Papers

AUUG 90

continued

Final Papers

Final Papers should contain a 100-300 word abstract, 10-20 pages of 10 point single spaced text with illustrative figures or diagrams where appropriate. Papers should reference other related work and contain citations to the relevant literature. They should be submitted in camera ready form in a high quality format, on single sided pages with 25mm margins from papers edge, with small page numbers at the centre-bottom of the page. They must be produced using a high quality printing device (300 dpi or better). The only form that will be acceptable via e-mail is PostScript**. Authors unable to meet these standards are welcome to contact the programme chair to arrange suitable output.

AUUG will require each author to sign a release to AUUG, but the author will retain copyright over their paper.

Timetable

Receipt of Extended Abstracts	Monday 5th February 1990
Letters of Acceptance	Monday 5th March 1990
Receipt of Final Papers	Monday 6th August 1990
Tutorials	Tuesday 25th September 1990
Conference and Exhibition	26th-28th September 1990

Tutorials

People wishing to present tutorials should contact

Chris Maltby
AUUG 90 Tutorials
Softway Pty. Ltd.
79 Myrtle Street
Strawberry Hils NSW 2012
AUSTRALIA

Telephone:	International	+61 2 698 2322
	National	(02) 698 2322
Facsimile:	International	+61 2 699 9174
	National	(02) 699 9174

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** PostScript is a trademark of Adobe Systems Incorporated.

Book Review: Two Examinations Of UNIX Internals

Bach, M.J. (1986): *The Design of the UNIX Operating System,* Prentice-Hall, 471pp., $33.95. ISBN 0-13-201757-1, and

Leffler, S.J., McKusick, M.K., Karels, M.J. and Quarterman, J.S. (1989): *The Design and Implementation of the 4.3BSD UNIX Operating System,* Addison-Wesley, 471pp., $45.95. ISBN 0-201-06196-1.

by

Frank Crawford
(frank@teti.qhtours.oz.au)
Q.H.Tours

Recently there has been a flood of books about how to use the UNIX operating system, how to administer it or how to program it, but very few on how UNIX really works. In this review two books about the internals of the UNIX operating system are covered, one that was published sometime ago and one that has just been published.

Bach's book is generally considered a good introductory text for operating system's courses. It covers all areas of modern operating systems, describing the algorithms and using the System V.2 kernel for examples where required. On the other hand, Leffler *et.al.* is aimed at a more advanced course on operating systems. It describes the same areas as Bach, but goes into much greater detail about the implementation of the algorithms, using 4.3BSD for all the examples. Further it is aimed at giving an authoritative account on the development and internals of 4.3BSD.

Although both books cover the same area, they emphasise different aspects and present the material in a different order. Bach covers the following:

- A general overview and introduction, including a brief description of system concepts and kernel data structures.
- The file system structure, describing in detail the buffer cache, internal representation of files (the superblock, inodes and disk block allocation) and the system calls relating to the file system. The file system layout described is the standard System V structure with only passing mention of the Berkeley Fast Filesystem.
- The structure and control of processes, breaking it into sections describing the structure and layout of a process, control and scheduling of processes and other process related system calls, *e.g. times(), time()* and *stime().*
- Memory management policies with considerable discussion about swapping and demand paging systems. As all UNIX kernels implement either only swapping or a combination of swapping and paging, there is a detailed discussion of swapping in System V, which then follows on to demand paging and the combination of the two.
- Device drivers, both block and character, how they interface with the rest of the kernel, and an overview of how they do their job. There is also a section on Streams, as implemented by Dennis Ritchie (which is slightly different from the implementation in System V.3).
- Interprocess communications such as the *ptrace()* system call, all the System V IPC calls (messages, semaphores and shared memory), an overview of traditional network communications facilities using character devices (*ala* UUCP) and a section on the Berkeley Socket mechanism.
- Finally there is a look at some operating system concepts not currently handled by UNIX. These include multiprocessor systems and distributed systems. Obviously these concentrate on methods employed by UNIX-like systems, *e.g.* TUNIS and the Newcastle Connection, and on remote procedure calls.

Throughout the book most major algorithms are described in a C-like pseudo code. All of the System V system calls are described along with most of the lower level routines such as *namei()* (the filename to inode translation routine).

By contrast, Leffler *et.al.*, although covering the same topic, does not aim to provide such a wide coverage but rather to go into depth about selected topics. It covers the standard 4.3BSD implementation while giving details about the recent 4.3BSD Tahoe release and POSIX where appropriate. The following topics are covered:

- A history of UNIX, especially the multitude of traces that converged to 4.3BSD.
- An overview of the design of 4.3BSD and of the kernel organisation and services.
- A study of process management and memory management. In particular there is an in depth study of context switching and on the implementation of demand paging on the VAX hardware for 4.3BSD. Rather than covering all areas of memory management, the emphasis is on the more difficult and unusual aspects and how it differs from theory.
- The I/O system, including how the Fast Filesystem is implemented, how device drivers are handled, particularly autoconfiguration, and the Berkeley line disciplines. A number of concrete examples are given using such devices as Emulex SC-21V on a UNIBUS, the UNIBUS adapter routines, and the *ht* magnetic tape on the MASSBUS.
- Interprocess communication, particularly sockets. This also includes the networking protocols, going through them in a layered approach of IPC, network communication and network protocols. The basic DARPA Internet Network Protocols are detailed, *i.e.* IP, UDP, TCP and ICMP. The algorithm used to implement TCP under 4.3BSD is described along with the most recent enhancements *e.g.* slow start algorithm.
- System operations, including details of how the system is bootstrapped, such programs as */etc/init* and */bin/login* and kernel configuration.

Throughout the book there is a concentration on providing detailed descriptions of certain areas, while glossing over areas that are either well known or covered by others.

Together these two books give an excellent coverage of the UNIX kernel. They are certainly aimed at different levels, but Leffler *et.al* follows on well from Bach, and I found that by reading them together and contrasting the two descriptions, my understanding of many areas was improved. It will be interesting to see how well these books relate to System V.4 when it is released, as this release attempts to merge both systems.

In summary, I found that the two books fulfill their distinct roles well, those being a detailed introduction by Bach and then a more advanced second course by Leffler *et.al.*. Depending on what level you are after, I would recommend either Bach, or both books. Finally as a method for system programmers and administrators to understand their appropriate system there can be nothing better than the relevant book.

1

Strategy

- Foster open software systems based on accepted industry standards and practices
  - IEEE POSIX
  - ANSI
  - OSI
  - SIGMA
  - Government Agencies (e.g., NIST)
  - X/OPEN
  - BSD
  - XENIX

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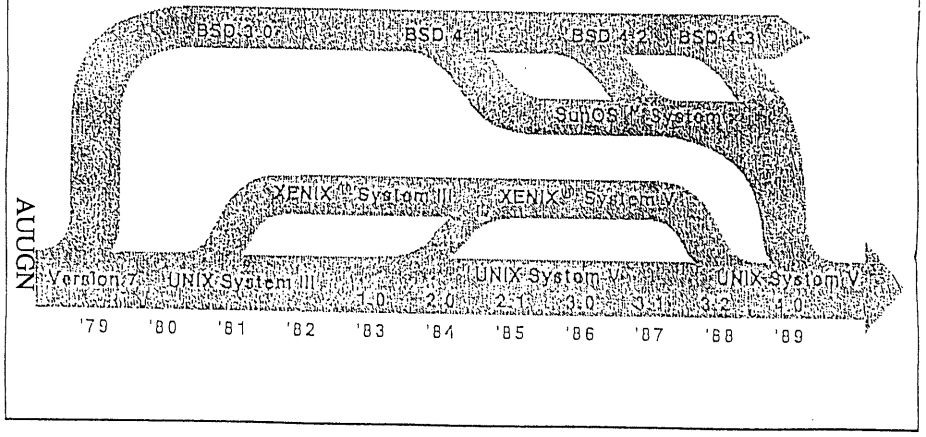
UNIX SYSTEM EVOLUTION



3

Release Plan

- Major release
  - Complete release of system
  - Released about every 2 - 3 years
- Feature/maintenance release
  - "Delta" update to major release
  - Released about 12 months after major releases as necessary
  - Performance and quality improvements

UNIX® System V

4

UNIX System V Release 3.2 Features

- Available 6/88
- 2K file system
- New line printer spooling utilities
- Hooks to support the addition of Network File System (NFS)
- Security enhancements
- Performance and quality improvements

UNIX® System V

5

UNIX System V Release 4 Objectives

- Facilitate standardization
- Help to define the future open computing environment
- Strengthen existing markets
- Penetrate new application areas

UNIX® System V

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UNIX SVR4 Operating System Overview

- File system
- Memory management
- Process management
- System scalability

UNIX® System V

6

UNIX SVR4.0 Feature Areas

- Operating system enhancements
- Standards
- Networking evolution
- Operations, administration and maintenance (OAM)
- Real-time support
- Internationalization
- C language
- Graphical terminal support

UNIX® System V

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UNIX SVR4 Operating System File System

- VFS file system architecture
- Several file types provided:
  - System V
  - RFS
  - PROC
  - SPECFS
  - UFS
  - NFS
  - FIFOFS
- Symbolic link capability

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UNIX SVR4 Operating System Memory Management

- VM architecture
  - Isolation of hardware-dependent code
  - Swapping to a file
  - Portable implementation
  - Mapped file I/O

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UNIX SVR4 Operating System System Scalability

- Dynamic allocation of system tables
- Tunable number of open files per process

UNIX® System V

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UNIX SVR4 Operating System Process Management

- Modular architecture
  - Allows several schedulers in system
  - Scheduler chosen with user command
  - Scheduler can be changed on running system
- Two schedulers provided
  - Traditional System V scheduler
  - Fixed-priority programmable scheduler

UNIX® System V

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UNIX SVR4 Standards Overview

- System V Interface Definition (SVID)
- System V Application Binary Interface (ABI)
- Incorporation of industry standards
- Convergence of UNIX System derivatives

UNIX® System V

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UNIX SVR4 Standards Overview (cont.)

- System V Interface Definition (SVID)
  - Defines interfaces provided by AT&T's System V
  - Tested by System V Verification Suite (SVVS)
  - Coordinated UNIX System V, SVID, and SVVS releases
- System V Application Binary Interface (ABI)
  - Defines interface for binary portability

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UNIX SVR4 Standards Overview (cont.)

- Incorporation of industry standards
  - IEEE P1003.1 (POSIX system standard)
  - ANSI X3J11 (C language standard)
  - X/Open Portability Guide 3
  - ISO
  - NIST
- Convergence with other standards
  - BSD and XENIX

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UNIX SVR4 Standards Functionality

- POSIX conformance (P1003.1)
  - Signal enhancements
  - Multiple groups and ownership
  - Job control
- X/Open conformance (XPG3)
  - Provision for XPG-conforming messaging
- BSD and XENIX convergence
  - BSD and XENIX application program interface
  - BSD commands
  - UFS file system type

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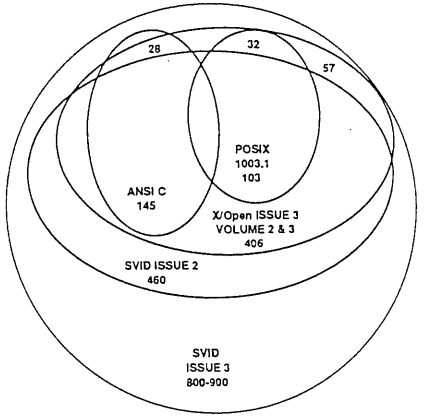
UNIX SVR4 Function Call Definitions



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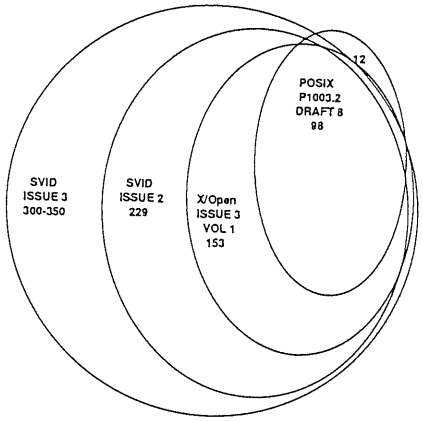
UNIX SVR4 Command Definitions



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UNIX SVR4 Application Binary Interface

- Set of software interfaces that allow binary (shrinkwrap) portability of application programs across specific architectures
- Does not mandate the presence of a particular operating system implementation
- Architecture-specific, but not specific to a particular computer or set of central-processor hardware
- Application programming interface in the ABI is a subset of SVID

UNIX® System V

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SVID Issue 3 Status

- SVID Issue 3 distributed for review - 2/89
  Windowing Extension not included
- Comments due back - 3/31/89
- Windowing Extension distributed for review - 4/89
- Windowing Ext. comments due back - 5/31/89
- Documents to printer - 6/15/89
- Production version available 9/89

UNIX® System V

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UNIX SVR4 Application Binary Interface Structure

- Generic, architecture-independent components:
  - Package installation
  - Library information
  - System services and commands
- Architecture-dependent components:
  - Virtual memory map
  - Formats of a.out and .o files
  - Sizes and padding conventions for data objects

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UNIX SVR4 Binary Interfaces

- System V Application Binary Interface (ABI)
  - Generic volume and several processor supplements
  - Includes SVID, Issue 3 interfaces
- System V Binary Compatibility Specification (BCS)
  - Generic volume and several processor supplements
  - Includes SVID, Issue 2 interfaces
  - Transitional specification, will be replaced by ABI eventually

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System V ABI Status

- Documents distributed for review - 4/15/89
  - Generic System V Application Binary Interface
  - ABI Supplements for SPARC and WE 32100
  - Generic System V Binary Compatibility Specification
  - BCS Supplement for WE 32100
  - 88open BCS for Motorola 88100
  - Intel BCS for Intel 80386
- All comments due - 5/31/89
- AT&T documents to printer - 7/1/89
- Production copies of AT&T documents available - 10/1/89

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UNIX SVR4 Networking Objectives

- Support remote processing
  - Transparent
  - Non-transparent
- Support evolution to OSI networking

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UNIX SVR4 Networking Features

- STREAMS
  - New TTY subsystem
  - Named STREAMS
  - Dynamic buffer allocation
- Common administrative support for RFS and NFS
- TCP/IP protocols and commands
- Unified access management
- Remote procedure call (RPC) library
- External data representation (XDR) library

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UNIX System V OAM Evolution

- Support for standalone environments
  - Better support for administrators
  - Better support for unattended operation
- Support for homogeneous environments
  - Remote operation of a network of systems
- Support for heterogeneous environments
  - Data networking environments (i.e., workstations, department servers, mainframes, etc.)
- Support for network management

UNIX® System V

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UNIX SVR4 OAM Features

- Software installation and configuration management
  - Installation from multiple sources
  - Mechanism to manage system configuration
- Backup and restore
  - Capability to support multiple destination types
  - Mechanism to track backup history
  - Support for on-line restore requests
- Message management
- OAM interface
  - Improve modularity and extensibility
  - Provide greater coverage of OAM tasks
  - Tool for building extensions to the interface

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UNIX SVR4 Real-Time Features

- User-controlled process scheduling
  - Fixed priorities
  - Kernel preemption
  - Dynamically-tunable parameters
- High-resolution timing services

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UNIX SVR4 Internationalization Objectives

- Provide a single UNIX System that supports the needs of all customers
  - Domestic, Far East, Middle East, Europe, Others
- Provide a framework and tools to support local adaptation of the system
  - Multiple character set support, message handling, date and time conventions, collating sequences, etc.

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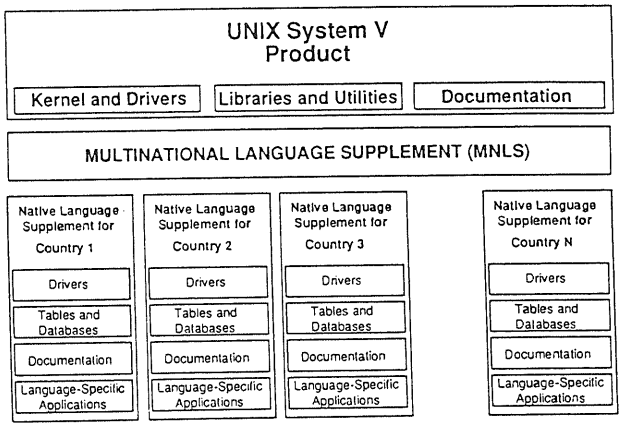
UNIX SVR4 Internationalization Overview



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C Language Objectives

- Provide a smooth migration to industry standards
- Support new features in UNIX SVR4
- Provide a sound foundation for technological advances in the 1990's

UNIX® System V

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UNIX SVR4 International Features

- Eighth bit clean-up
  - Remove use of eighth bit in utilities and library routines
- Character set support
  - Support non-ASCII character sets
  - Support multiple character sets simultaneously
- National conventions (adopted: ANSI C X3J11)
  - Collating sequence
  - Character classifications
  - Numeric representation
  - Date and time representation
- Message handling facility
  - Support multiple languages concurrently
  - Intelligent argument handling

UNIX® System V

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C Language Features

- C Issue 5 packaged with UNIX SVR4
- Conformance to ANSI X3J11 C language standards
- New object-file format - ELF
  - Increased performance
  - Support for COFF executables will continue
  - New format supports dynamic linking
- Support for dynamically-linked shared libraries
- New international features
- Support tools for converting old object files to ELF

UNIX® System V

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User Interface Objectives

- Provide useful, easy-to-use interface technology for all kinds of terminals
- Conform to industry standards
- Define standard "look and feel" for user terminals with graphics capabilities

UNIX® System V

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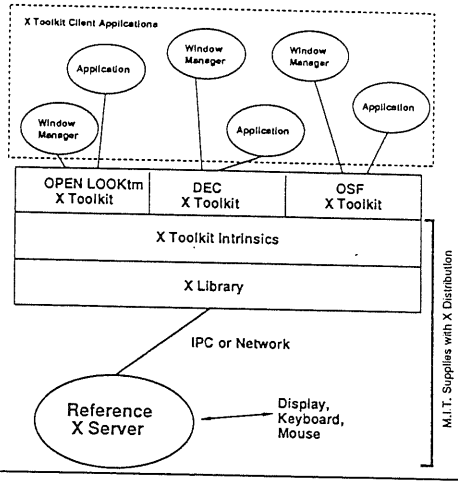
X Toolkit Application Architecture



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Graphics User Interface Features

- Packaged with UNIX SVR4
- Support for X 11.2 and NeWS intrinsics
- OPEN LOOK™ toolkits
  - Define a standard "look and feel"
  - Work with either X 11.2 or NeWS
  - Provide window manager, terminal emulators, file manager, etc. as OPEN LOOK applications.

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Character User Interface Features

- Packaged with UNIX SVR4
- Extended terminal interface (ETI) library
  - High-level display control for ASCII terminals
  - Extends the capabilities of the CURSES library
- Frame Access Control Environment (FACE)
  - Display language and interpreter for writing form-and-menu windowing displays
  - Easy-to-program display control for ASCII terminals

UNIX® System V

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Other Features in SVR4.0

- The Korn shell, ksh
- The C shell, csh
- New directory layout
- BSD commands and system calls
- XENIX commands and system calls
- XENIX semaphores

UNIX® System V

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UNIX System V Release 4.0 Summary

- Features:
  - Operating system enhancements
  - Standardization
  - Real-time support
  - International capabilities
  - Enhanced OAM capabilities
  - Enhanced networking services
  - C language
  - Graphical terminal support

UNIX® System V

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UNIX System V Release 4.1 Objectives

- Provide full security capabilities
- Provide remote administrative capabilities

UNIX® System V

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UNIX SVR4.1 Security Overview

- Government requirements
  - National Security Decision Directive 145
  - Foreign governments (e.g., United Kingdom, Sweden, France, Canada)
- Commercial requirements
  - Banking industry
  - Data processing industry
- Standards
  - /usr/group tech subcommittee on security
  - IEEE P1003.6 security subcommittee
  - X/Open security subcommittee

UNIX® System V

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UNIX SVR4.1 Security Background

1983: DoD published Trusted Computer System Evaluation Criteria (the "Orange Book")

Criteria system (Software, Firmware, & Hardware) must be certified as meeting multilevel secure standards

Security Levels: Least Secure ... Most Secure

Divisions:	D	C		B		A
Levels:		C1	C2	B1	B2	B3

- Each level builds on the requirements of all lower levels

Certifying body = National Computer Security Center (NCSC)

- Publish criteria
- Offer developmental and formal certification programs

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UNIX System V Security System V MLS

- Kernel add-on to UNIX SVR3
- SVID-compatible
- Provides B1 features - currently in formal NCSC evaluation
  - Auditing
  - Discretionary access control
  - Mandatory access control
- Available - now
- Provides migration path to UNIX SVR4.1 facilities

UNIX® System V

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UNIX SVR4.1 Security Feature Areas

Goal = B2+ certification

- Identification and authentication
- Discretionary access control (B3)
- Mandatory access control
- Auditing
- System architecture
- Trusted path
- Covert channel analysis
- Trusted facility management (B3)
- Documentation
- Testing

UNIX® System V

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Proposed UNIX SVR4.1 OAM Features

- Logging
  - Console logging
  - Message logging
  - Reporting facility
- Monitoring
  - System monitoring
  - Process monitoring
  - Error log monitoring
- Remote Administration
  - Remote operations server
    - Identification, authentication, ID mapping
  - Software Distribution
  - Monitoring
  - Logging
  - OAM Interface

UNIX® System V

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System V Product Migration

Release 3.2 1988	Release 4.0 1989	Release 4.1 1990
UNIX SVR3.2 OS C Issue 4.2 X v11r2 Windows OPEN LOOK XT+ r1 (tools, app) System V BCS SVVS Release 2.0 System V MLS MNLS, JAE, GAE, FAE, CAE	UNIX SVR4.0 OS C Issue 5.0 X v11r3 / NeWS Windows OPEN LOOK XT+ r2 OPEN LOOK NDE Toolkit System V ABI SVVS Release 3.0	UNIX SVR4.1 OS SVR4.1 Security MNLS, EAE, JAE, GAE, FAE, SAE

UNIX® System V

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Future UNIX System V Features Identified by UNIX International

- Standard multiprocessor support
- Transaction processing
- Additional OAM features
  - Large environment support
  - Resource management
  - Performance measurement tools
  - System accounting tools
- Additional international features
- User interface support
- C++
- Software development tools
- SVID and ABI evolution

UNIX® System V

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UNIX International Interaction

- SVR4.0 and SVR4.1 product definition
  - Development status
  - Licensing terms
  - Periodic reviews
  - SVID and ABI planning
  - Early access mechanism
    - Requirements and design documents
    - Porting base (3B2) source code
    - Intel 80386 source code
    - SVVS source code
- Future product definition
  - Work groups
  - Special interest groups

UNIX® System V

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Summary

- UNIX System V:
  - Is an open architecture that supports all current industry standards
  - Is highly portable because of its clean, modular implementation
  - Provides a rich set of capabilities for user application programs
  - Is steadily being enhanced in an upward-compatible way

UNIX® System V

;login:

The USENIX Association Newsletter

Volume 14, Number 3 **May/June 1989**

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The closing date for submissions for the next issue of *;login:* is June 30, 1989

THE PROFESSIONAL AND TECHNICAL UNIX® ASSOCIATION

Au revoir and Hello

As most of you who have read *comp.org.usenix* know, I have resigned from my post as Executive Director of USENIX to return to the Northeast. By the time this is published, I will have assumed the post of Director of University and Government Relations with the Open Software Foundation in Cambridge.

I have enjoyed my three years as Executive Director tremendously: having been active in increasing the number of workshops; in getting the proceedings published; in setting up the scholarships has been very exciting. Even more rewarding has been my role as Managing Editor of *Computing Systems*. To my great pleasure, the USENIX Board and Mike O'Dell, the Editor-in-Chief, have asked me to continue in that role. I will also continue to participate in the complimentary tutorial on writing and submitting abstracts, papers and articles at forthcoming technical conferences.

There is no way that I can possibly thank the many USENIX members who have made my tenure pleasant: the various Board members, the chairs of conferences, workshops, and committees; the authors of articles and reviews for the newsletter and the journal; have all treated the resident technical ignoramus with great tolerance. The USENIX staff, in all three offices, has made my job a pleasure.

I think it is important for me to say all this at the same time that I pass the baton to a new Executive Director: Ellie Young, who has served as my deputy since last summer, has been appointed by the Board. She came to USENIX after several years as the Journals Manager of the University of California Press, and will now be the one to suffer the tribulations of insufficient soda at tutorial breaks, election tallies, bizarre requests from members, Board minutes, and publishing proceedings and *;login:*.

Mike O'Dell once wrote that my job was like herding cats: I'm sure Ellie will be a superb tamer of felines.

Peter H. Salus

USENIX 1989 Summer Conference Tutorials

June 12-16, 1989
Baltimore Convention Center
Baltimore, MD

The tutorial program for the Summer Technical Conference and Vendor Exhibition is listed below. Complete descriptions of the individual tutorials, as well as the Conference agenda, registration information, etc., are contained in the registration packet (which was mailed on April 10). If you need another registration packet or further information, contact the USENIX Conference Office at the address below.

Monday, June 12, 1989

Mach Overview
Avadis Tevanian, NeXT, Inc.

Introduction To Programming the X Window Systems, Version 11
Oliver Jones, Apollo Computer

An Introduction to C++
Rob Murray, AT&T Bell Labs

Security Issues in a Distributed UNIX Environment: The Kerberos Approach
Dan Geer, Jeff Schiller and Jon Rochlis, MIT

Performance Measurement Tools and Techniques Under UNIX System V
Danny Chen and Ron Barkley, AT&T

Introduction to 4.3BSD Internals
Tom Doeppner, Brown University

Introduction to UNIX System V Internals
Steve Buroff, AT&T, and Curt Schimmel, Key Computer Lab

TCP/IP Performance Enhancements
Mike Karels, UC Berkeley, and Van Jacobson, LBL

Designing and Maintaining a LAN
Evi Nemeth, Bob Coggeshall and Trent Hahn, Univ. of Colorado

AIX Technology
Charlie Sauer and Jack O'Quin, IBM

PostScript in the UNIX World
Dick Dunn, Interactive Systems Corp.

UNIX System V Remote File Sharing (RFS)
Mike Padovano and Mike Scheer, AT&T

UNIX Network Programming
Richard Stevens, Health Institute International

Tuesday, June 13, 1989

Mach Virtual Memory Internals
Nawaf Bitar, Apollo Computer

XToolkit Intrinsics
Paul Kimball, DEC

Using Advanced C++ Features
Stanley Lippman, AT&T Bell Labs

Network Computing System & Architecture:
Overview & Tutorial in Writing Distributed Applications
Nathaniel Mishkin and Paul Leach, Apollo Computer

Introduction to the Internals of the Gnu C Compiler (GCC)
Richard Stallman, GNU Project

Beyond 4.3BSD: Advanced Kernel Topics
Mike Karels and Marshall Kirk McKusick, UC Berkeley

Advanced UNIX System V Internals – A Code Walk Through
Steve Buroff, AT&T, and Curt Schimmel, Key Computer Lab

UNIX 4.xBSD Systems Administration
Rob Kolstad, Prisma, Inc, and Evi Nemeth, Univ. of Colorado

UNIX Device Driver Design (4.2/3BSD)
Dan Klein, Software Engineering Institute

Software Contracts and Intellectual Property
Dan Appelman, Heller, Ehrman, White & McAuliffe

Using the NeWS Window System
David LaVallee and Owen Densmore, Sun Microsystems

Writing Distributed Applications Using the ONC Platform
John Corbin and Chris Silveri, Sun Microsystems

Special Topics in C
Carol Meier, API Ltd.

For further information:

USENIX Conference Office
22672 Lambert Street, Suite 613
El Toro, CA 92630

(714) 588-8649
judy@usenix.org

Call for Papers
Workshop on
Large Installation Systems Administration III
September 6-8, 1989
Austin, TX

In light of increasing attendance at the workshops on Large Installation Systems Administration, plus contributions from various places (academia to standards efforts to commercial development work on system administration tools), the third annual workshop on this subject will again be chaired by Alix Vasilatos in Austin, TX on Thursday and Friday, September 7th and 8th, 1989, preceded by a day of system administration tutorials.

For the first time, a program committee will be reviewing submitted papers on subjects including, but not limited to:

Automating systems administration chores
Network management
Distributed services
Backup and archiving
Spooling/Queuing schemes
Configuration synchronization
Accounting/Passwd maintenance
Electronic communication (USENET/News/Notes/Mail)
Software distribution
Reliability enhancement

Papers can range in length from "very short" (1-3 pages) to not over 14 pages including all figures, diagrams, etc. Complete papers only, please, even if short. Abstracts and outlines will not be accepted. Include a description of the unique characteristics of the site, an outline of the problem, and a description of the solution (detailed enough that fellow administrators can implement it). Workshop proceedings will be available at the workshop.

The deadline for submissions is **June 30, 1989**. For further details about the workshop, contact:

Alix Vasilatos
Open Software Foundation
11 Cambridge Center
Cambridge, MA 02142

(617) 621-8722
alix@osf.org

For details about registration, contact the USENIX Conference Office.

Call for Participation

Workshop on Experiences with Building Distributed (and Multiprocessor) Systems†

October 5-6, 1989
Ft. Lauderdale, FL

Goals: The goal of this workshop is to bring together individuals who have built, are building, or will soon build distributed and multiprocessor systems, especially operating systems. The workshop will feature full presentations, panels, work-in-progress presentations, and possibly tutorials on aspects of building and testing these systems. The workshop will provide a forum for individuals to exchange information on their experiences, both good and bad, in designing, building, and testing their systems. This includes experiences with coding aids, languages, distributed debugging tools, prototyping, reuse of existing software, performance analysis, and lessons learned from use of such systems.

Submissions: *Ten* copies of each submission should be mailed to the program committee chair (address below) no later than **1 June 1989**. Submissions are invited on any topics related to the workshop in the form of papers or extended abstracts, although the program committee will give preference to full papers. Furthermore, the committee will give preference to submissions describing experiences with actual systems.

Registration and attendance will be limited.

Important Dates

Paper submissions	1 June 1989
Program Committee decisions	14 July 1989
Camera ready copy due	1 August 1989
Workshop	5-6 October 1989

For Further Information, contact:

General Chair
George Leach
Paradyne Corporation
MS LG-129
PO Box 2826
Largo, FL 34649-2826

(813) 530-2376
reggie@pdn.nm.paradyne.com

Program Chair
Gene Spafford
Software Engineering Research Center
Dept. of Computer Sciences
Purdue University
W. Lafayette, IN 47907-2004

(317) 494-7825
spaf@cs.purdue.edu

† Sponsored by The USENIX Association; in association with the NSF / Purdue / Florida Software Engineering Research Center; in cooperation with ACM SIGOPS and SIGSOFT (pending) and IEEE-CS Technical Committee on Distributed Processing (pending).

Call for Participation
5th USENIX Computer Graphics Workshop
November 16-17, 1989
Doubletree Hotel – Monterey Convention Center
Monterey, CA

The 5th USENIX Computer Graphics Workshop will be held in Monterey on Thursday and Friday, November 16-17, 1989. The theme of the workshop is "personal graphics." By this, we mean the use of computer graphics to aid, benefit, or amuse a single person. Generally, personal graphics applications are highly interactive, so that the user has a great deal of control over the result. Furthermore, the graphics is frequently not an end product, but is instead a communication medium between the user and computer. Examples of personal graphics might include desk-top publishing, data visualization programs (e.g., MacSpin), windowing systems, micro-world simulations (Kay's vivarium?), and "performance" graphics (e.g., video weirdness). It probably does not include ray-tracing, yet another VLSI graphics chip, or fast rendering algorithms. A distinguishing feature is that the user is included as an integral part of the description of the system.

Personal graphics is becoming increasingly important as the cost of high-performance computing gets lower and lower, so that "Joe Public" is exposed to better and faster graphics than was previously possible. You only have to look at the progression from PC to Macintosh to NeXT to see this trend. One question that could be addressed by presentations in this workshop is "How are 'ordinary people' going to effectively use computer graphics in their daily lives?"

In addition to traditional full-length papers, we will entertain proposals for more informal short presentations and panel discussions. Submissions for the workshop will be judged on their intrinsic merit, but preference will be given to those which bear closely on the theme.

Extended abstracts (300-700 words) or position papers should be submitted by **July 3, 1989**. Authors will be notified of acceptance by **July 17, 1989**. Materials for inclusion in the proceedings should be submitted by **October 2, 1989**. Submissions may be made electronically or as hard-copy. Electronic submissions should be plain text, *troff* (-ms or -me preferred, do not use -mm), *LaTeX*, or PostScript. Mail electronic submissions to *usenix-graphics@crim.eecs.umich.edu*, or send hard-copy to the workshop chair:

Spencer W. Thomas
EECS Department
University of Michigan
1101 Beal Ave.
Ann Arbor, MI 48109-2110

(313) 936-2616

Call for Papers
Winter 1990 USENIX Conference
January 22-26, 1990
Omni Shoreham
Washington, DC

Papers are sought in all areas of UNIX-related research and development for the technical program of the 1990 Winter USENIX Conference. Papers which are accepted for the conference will be published in the conference proceedings and shall be presented during the three days of technical sessions at the conference.

Appropriate topics for presentation include, but are not limited to:

New Tools and "Little Languages"
UNIX and AI:
  Intelligent Systems
  Neural Nets
Ada and UNIX –
  Real Experience and Future Expectations
File Systems and Servers
  Failsafe and Failsoft File Managers
  Hierarchical File Migration
  Version Control
Architectures and Compilers
Software Release Systems and Servers
  Documentation issues
Distributed Systems and Services
  Networking and Security
User Interfaces and
  User Interface Management Systems
Experiences and Novel Applications

All submissions will be considered – however, papers detailing new and interesting work will be regarded much more favorably than thinly disguised product announcements or re-runs of previous reports. The Winter 1990 conference is requiring that **extended abstracts** (and *not* full papers, as in previous conferences) be submitted. An extended abstract should describe the nature of the work, summary of results and conclusions, and should be between 1000-2000 words long (two to three typeset pages). Time is scheduled for authors of accepted papers to complete their submissions; therefore, extended abstracts will only be accepted when it is felt that a complete and worthy paper can be produced by the final due date.

The final paper should include a 100-300 word abstract, a discussion of how the paper relates to other work, illustrative figures (where appropriate), and citations to relevant literature. Only previously unpublished submissions will be considered. Final papers should contain on the order of 8-12 pages of single spaced typeset materials. All final papers must be submitted in a camera-ready format or electronic format (*troff -ms* if possible) – typewritten or dot-matrix output is **not** acceptable as final output. For authors without access to a laser printer or typesetter, appropriate facilities will be provided by the program chair.

Please submit abstracts as soon as possible, and mail one hard-copy and one electronic-copy to the addresses below. The final deadline for receipt of submissions is **August 14, 1989**; abstracts received after this deadline will not be considered. Notification of acceptance or rejection will be made by **September 25, 1989**. Final camera-ready papers are due by **November 17, 1989**.

To submit a paper or request additional information, please contact:

Daniel V. Klein
Washington USENIX Technical Program
Software Engineering Institute
Carnegie Mellon University
Pittsburgh, PA 15213

+1 (412) 268-7791 (work)
+1 (412) 422-0285 (home)
+1 (412) 268-5758 (FAX)
wash-usenix@sei.cmu.edu
uunet!sei.cmu.edu!wash-usenix

Program committee:

Daniel V. Klein, Chair – Software Engineering Institute, CMU
Eric P. Allman – International Computer Science Institute
Pat Caruthers – Aratar
John Devitofranchesi – University of Illinois, Urbana
Michelle Dominijanni – Concurrent Computer Corporation
Daniel Geer – Massachusetts Institute of Technology
Chet Juszczak – Digital Equipment Corporation
John R. Mashey – MIPS Computer Systems
Michael D. O'Dell – Prisma, Incorporated
Charlie Perkins – IBM, T.J. Watson Research
Dennis M. Ritchie – AT&T Bell Laboratories
Susanne Smith – Windsound Consulting
Alix Vasilatos – Open Software Foundation

Please remember to include your email and postal addresses on any correspondence.

AUUG '89 Conference and Exhibition
August 8-11, 1989
Hilton Hotel
Sydney, Australia

The 1989 Conference and Exhibition of the Australian UNIX systems User Group will be held August 8-11 at the Hilton Hotel in Sydney, Australia. Tutorials will be held on Tuesday, and the conference proper Wednesday to Friday. The Conference theme is

No one ever got fired for buying UNIX

The guest speakers will include Dennis Ritchie, James Gosling, and Sunil Das.

Further information may be obtained from Peter Barnes,

uunet!munnari!uqcspe.cs.uq.oz!pdb
pbd@uqcspe.cs.uq.oz

USENIX C++ Workshop

The USENIX Association will be sponsoring a limited attendance C++ Workshop in 1990. The format will be similar to that of the Santa Fe C++ meeting, but may be three days long.

Jim Waldo of Apollo Computer is the Workshop Chair. If you are interested in discussing the workshop format and/or topics, contact Jim at *waldo@apollo.com*.

A call for papers will appear in *;login:* and on *comp.org.usenix*.

Nominating Committee Formed

The USENIX Association will hold elections for the Board of Directors in 1990. A committee has been formed to nominate candidates. The committee members are

Ed Gould, Chair, mt Xinu
Tom Ferrin, UC San Francisco
Charlie Sauer, IBM Austin
Wendy Thrash, Pyramid Technology
Pat Wilson, University of Virginia
Elizabeth Zwicky, Ohio State University

The positions on the USENIX Board are

President
Vice President
Treasurer
Secretary
Member at Large (four positions)

Board members all serve two-year terms. The committee will be making nominations for all offices and at-large positions.

We are soliciting suggestions for nominations. If you suggest someone other than yourself, please be sure the person you suggest concurs or that you clearly tell the committee that they have not agreed.

Suggestions for nominees, and other comments, may be sent to the committee at

nominate@usenix.org
uunet!usenix!nominate

– Ed Gould

The UK UNIX systems User Group

History of the UKUUG and EUUG

The UK UNIX User Group (UKUUG) was initially formed during the academic year 1976-77. It grew under Alan Mason's Chairmanship (1979-82) with Peter Gray and Alistair Kilgour on the original committee. At this time UNIX in the UK consisted of V5 and V6 sites, and Herriott-Watt's (a Scottish university) V6+.

In 1980, in recognition of the increasing number of non-UK members joining UKUUG, the name was changed to the European UNIX User Group (EUUG), and later a separate National UK Group was formed. In 1982, the authorities (i.e. AT&T) decreed that henceforth the word UNIX was to be used as an adjective and not a noun. Thus, the word systems (the lowercase s is deliberate) had to be inserted into User Groups' titles. The European organisation was re-structured in 1983 to consist of a number of national groups from many European countries.

Introducing the UKUUG

The UKUUG is a non-profit organisation which exists to provide a body representing the users of UNIX and UNIX-related systems in the United Kingdom. It is unique in catering for the needs of users and being totally independent from specific hardware and software vendors. UKUUG is affiliated with the EUUG. The advantage of this structure is that UKUUG members can accrue the benefits of UK activities, such as permission to participate in UKnet, the UK branch of the world-wide uucp computer network, and attendance at discounted member rates of the bi-annual two-day technical meetings, while receiving the services provided by the EUUG, such as four free copies per annum of EUUGN, the Newsletter, and attendance at EUUG Conferences and Tutorials.

The UKUUG membership is drawn from the information technology, commercial and research/academic sectors in equal proportions. The membership can be found working in software engineering, computer manufacturering, as end-users, in software houses, universities and research centres. They all share the fact that they are UNIX users, whether they develop kernel modifications, develop applications, are involved in teaching and research, use their system in a turnkey environment, or any other sphere of interest. In order to maintain its independence from software and hardware vendors, the UKUUG is funded entirely by membership subscriptions. Needless to say, all the major suppliers of UNIX and UNIX-related systems are members. There are two categories of membership of UKUUG: institutional and individual.

Members of UKUUG are especially active in the UK, European and American standards bodies such as the British Standards Institution (BSI), the International Standards Organisation (ISO) and the Institute of Electrical and Electronic Engineers (IEEE). They provide significant input to committees involved in creating standards, such as ANSI C, POSIX, SVID and X/OPEN.

UKUUG holds a two-day Technical Meeting twice a year, in the Summer and Winter, at various venues around the country. Recent meetings have been held in Glasgow, London, Manchester, Newcastle and Canterbury. The next meetings will be held in June 1989, with Strathclyde University acting as host, followed in December at Cardiff University.

The purpose of these meetings, which are open to non-members as well as members, is to provide a forum for the dissemination and discussion of developments concerning the UNIX and C programming environments. An international guest speaker is invited to present a paper, in addition to those presented by UKUUG members. Papers are published in advance of the meeting. An attempt is made to keep the entrance fee at a level which just covers the costs of organising and running the meeting. In practice, UKUUG has subsidised the meetings. Members receive the benefit of a discounted entrance fee.

In April 1988, UKUUG acted as host to the EUUG's Spring Conference which was held

at the Queen Elizabeth II Conference Centre in Parliament Square, London. The Conference entitled "UNIX around the World" was attended by nine present and past members of the Computer Science Research Centre of AT&T Bell Laboratories, including Dennis M. Ritchie, Doug McIlroy, Dave Presotto and Andrew Hume.

The UKUUG will be holding a five day Conference, tutorial and exhibition programme 9-13 July, 1990. Guest speakers include Ken Thompson and Brian Kernighan.

Sunil K. Das, UKUUG Chair

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NN
      UNIX USERS MEETING AGENDA
      MAY 15, 1974
      MERRITT CONFERENCE ROOM - 3RD FLOOR P&S

10:30 START
11:30 BRIEF DESCRIPTION OF THE SEVERAL INSTALLATIONS
      AND THEIR USE OF UNIX
12:00 LUNCH
1:00  KEN THOMPSON SPEAKS
2:00  INTERCHANGE OF UNIX HINTS, PROBLEMS SOLUTIONS, BUGS
3:00  INTERCHANGE OF DEC HINTS,  PROBLEMS SOLUTIONS, BUGS
4:00  FREE-FOR-ALL DISCUSSION
?

*P&S   (3+2+2=7)
*BIO   (2)
*BROOKLYN  (4)
U.N.C.     (1)
BROOKHAVEN (4)
YALE       (1?)
*GEORGIA TECH  (1)
*WISCONSIN     (1)
CUNY           (1?)
POLY OF BROOKLYN      (1)
NYU                   (1)
BELL LABS      (2)
A COUPLE MORE I FORGOT
THE '*' ONES HAVE UNIX I THINK
```

Reidar Bornholdt kindly supplied this copy of the first UNIX Users Meeting Agenda, which was organized and chaired by Lou Katz.

Book Review: Learning the vi Editor

by Linda Lamb
(Newton, MA: O'Reilly & Associates, 1988) 144 Pages, $15.00

Reviewed by Peter H. Salus

Open Software Foundation
peter@osf.org

It is hard to believe than anyone can work on a UNIX system for more than a few moments without invoking *vi*. Whether your site runs System V.x or 4.nBSD, your system has *vi*. And though there are folks who use some version of emacs or the Grand Editor, most of us employ *vi*.

This being true, it is hard for newcomers to adapt to the notion that they will have to learn how to do things by reading Joy/Horton in the manuals (a treat for the uninitiated) or purchase Bolsky's 1984 AT&T handbook (good, but too brief) or buy Hansen's 1986 book (overpriced, but satisfactory). There were also the earlier editions of Lamb's volume in ORA's "Nutshell" series.

I readily admit to having been less than overwhelmed by the first edition of Lamb (early 1986). The second edition (also in 1986) contained minor corrections. The third (summer 1987), was a major revision, much enlarged and containing a useful index by Walter Gallant. The fourth edition, which I have been using for over six months, is an updating of the third.

I am running through the publication history because I think that the ability to adapt and revise and reprint with reasonable alacrity is one of the great advantages of the way that O'Reilly & Associates produce their handbooks.

I went through Lamb's *Learning the vi Editor* myself and then gave it to a new employee (who had never worked on a UNIX system before). Lamb's book was perfect for the beginning newcomer: shortcomings of the first edition had been filled out and the material was not introduced in a way that would deter the new user.

I have since given it to two other newcomers, with amazing success. Lamb appears to have avoided all the pitfalls of writing at too-advanced a level, assuming knowledge, etc., at the same time that *Learning the vi Editor* is not so elementary that experienced users will find it excruciating.

As someone who uses *vi* for several hours every day, I admit to learning several tricks from Lamb's "Advanced Editing" chapter.

For those who are looking for an introductory book to give to new staff members who have no acquaintance with either screen editing or with UNIX screen editing, this is it: a book on *vi* that is neither designed for the UNIX in-crowd, nor so imbecilic that one is ashamed to use it.

Brief Note: If you have someone on your site who has never worked on a UNIX system and who needs a quick how-to, Nutshell has the right booklet. *Learning the UNIX Operating System* by Grace Todino and John Strong (81 pages; $9.00) can get a newcomer rolling in a single session. It covers logging in and out; files and directories; mail; pipes, filters, backgrounding; and a large number of other topics. It's clear, cheap, and can render a newcomer productive in a few hours.

Long-Term Calendar of UNIX Events†

1989 Jun 12-16	USENIX	Hyatt Regency, Baltimore, MD
1989 Jul 10-12	13th JUS UNIX Symposium	Tokyo, Japan
1989 Jul 10-14	IEEE 1003	San Francisco, CA
1989 Aug 8-11	AUUG Conference	Sydney, Australia
1989 Sep 7-8	* Large Systems Admin. Workshop	Austin Marriott, Austin, TX
1989 Sep 12-13	MALNIX	Kuala Lampur, Malaysia
1989 Sep 18-22	EUUG	Vienna, Austria
1989 Sep 27-29	Workstation Operating Systems	Pacific Grove, CA
1989 Oct 5-6	* Distributed Systems Workshop	Marriott Marina, Ft. Lauderdale, FL
1989 Oct 16-20	IEEE 1003	Brussels (or Amsterdam)?
1989 Nov 1-3	UNIX Expo	New York, NY
1989 Nov 6-10	DECUS	Anaheim, CA
1989 Nov 9-10	14th JUS UNIX Symposium	Osaka, Japan
1989 Nov 16-17	* Graphics Workshop V	DoubleTree Hotel, Monterey, CA
1989 Dec 5-6	JUS UNIX Fair 89	Tokyo, Japan
1990 Jan 22-26	USENIX	Omni Shoreham, Washington, DC
1990 Jan 23-26	UniForum	Washington Hilton, Washington, DC
1990 Jan 29	IEEE 1003	New Orleans, LA
1990 Feb	UNIX in Government	Ottawa, Ont.
1990 Apr	IEEE 1003	Montreal, Que.
1990 Apr 23-27	EUUG	Munich, Germany (tentative)
1990 May 7-11	DECUS	New Orleans, LA
1990 May	UNIX 8x/etc	/usr/group/cdn; Toronto, Ont.
1990 Jun 11-15	USENIX	Marriott Hotel, Anaheim, CA
1990 Autumn	EUUG	south of France
1991 Jan 21-25	USENIX	Grand Kempinski, Dallas, TX
1991 Jan 22-25	UniForum	Infomart, Dallas, TX
1991 Jun 10-14	USENIX	Opryland, Nashville, TN
1992 Jan 20-24	USENIX	Hilton Square, San Francisco, CA
1992 Jan 21-23	UniForum	Moscone Center, San Francisco, C/
1992 Jun 8-12	USENIX	Marriott, San Antonio, TX
1993 Jan	USENIX	California
1993 Jun 21-25	USENIX	Cincinnati, OH

† Partly plagiarized from John S. Quarterman and Alain Williams by PHS.

* USENIX Workshops

An Update on UNIX Standards Activities

Overview following Ft. Lauderdale meeting February 20, 1989

Shane P. McCarron, NAPS International

This marks the fifth in a series of articles about the UNIX Standards community. Before we get too far here, I would like to apologize for the lateness of this particular report. While it should have been out in mid-February, it is now late March and I am just completing the editing. Hopefully this type of delay will not be seen again.

The big news this quarter is that the ANSI C Standard X3.159-1989 has been approved by the X3 Secretariat. This means that the X3 people are satisfied with the technical merit of the standard, as well as with the procedures that were followed in completing it. Once it has been formally reviewed by ANSI, we will have an American National standard for the C language. This is good and bad. The C Language standard has a few glaring flaws that make it all but impossible to write a truly portable application. I am certain that it is possible to write a mostly portable application with little difficulty, but that wasn't really the goal of the standard. More on this later.

This quarter we have reports from a number of committees. They are in various states of repair, with varying levels of detail. I have received little feedback from you about how much detail should be included in the reports. Consequently, it has been left up to the USENIX Watchdog Committee contacts to generate as much or as little material as they see fit. If you have comments on this, please send them to me or directly to the contact person whose report you are commenting on.

As always, we are looking for a few good people to represent us in standards committees. If you would like to work with us in trying to bring the world of standards to light, please contact the Standards Watchdog Committee's Volunteer Coordinator, Marc Teitelbaum (415-643-6448).

[Shane has a new job and a replacement is being sought; interested parties should write John Quarterman at *jsq@usenix.org* –EY]

1003.0 – POSIX Guide

The following report is printed exactly as it was sent to me by our contact in 1003.0. I find his unedited observations to be very enlightening.

This past Jan 89 meeting for IEEE 1003.0 group is the fourth since the group's inception. The first took place in March 1988. In summary, it has been a bit of a roller coaster ride. We jumped into the fray back in March with high expectations and with the strong intentions of having taken bold steps by now. Upon coming up to our one year mark, it is clear to me that we have been (and still are) experiencing a right of passage. Specifically, we have gone through the growing pains that every volunteer organization does when attempting to take bold strides, only to stumble on such things as consensus, priorities, level of detail, and parameters.

It also clear to me that this was inevitable. Given the state of affairs within this whole realm of open systems, i.e. contention and conflict, and given the goal of our attempting to address this realm (to which no accredited body has addressed itself to date), conflict and a bit of thrashing around were, in retrospect, to be expected. The group is reaching the point where a significant amount of synergy is developing. I would define that as everyone knowing what to expect from those who are the most vocal AND each person knowing when to limit and/or categorize his/her discussion.

We struggled with procedural issues in order to ensure that anarchy did not reign while concurrently ensuring that creativity was not stifled. We are beginning to reach this goal.

We experienced the classic problem of everyone during a meeting setting high and lofty goals only for things to fall through the cracks when they returned to their jobs and saw other pressing priorities awaiting them. Goals set during this past meeting were more pragmatic and better thought out. In addition, the group's leadership is taking a more active role to ensure that friendly reminders and follow ups occur. (I thought I heard someone say that their legs might be broken if action items were missed but I was outside getting a cup of tea at the time.)

One very key and contentious issue which was discussed and tabled was that of changing our PAR to say that we will develop a standard instead of a guide. This kind of change has far-reaching ramifications and, in my strong opinion, is unwise and unneeded. Some felt it was necessary to put some "teeth" into our end-product by making it a standard. So much attention is being paid to our effort now that a basic list of priority standards would garner significant consumption. And we are certainly proceeding further than that.

Overall, the group is coming together and a second draft version is in the works. (Draft 1 was, for the most part, an outline). The goal for our April meeting is to have a draft that the group feels is mature enough to begin invoking the formal proposal process for future changes. We'll have to wait and see what these next few months yield.

The USENIX Standards Watchdog Committee contact for 1003.0 is Kevin Lewis. He can be reached at:

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+1 (202) 383-5633

1003.4 – Real Time Extensions to POSIX

In the previous report, I reported that the Real-Time committee was prepared to start mock ballot procedures after the January meeting. For those of you who have just tuned in, a mock ballot is a review process where IEEE formal ballot rules are used, but the ballot is not conducted by the IEEE Standards Office. It is used by some committees as a means of testing to see whether their draft is ready for prime time. Anyway, it appears that there were a few problems that came up at the last minute, and the anticipated mock ballot did not happen.

The main reason for this is that two important proposals have not reached full consensus within the committee – Realtime Files and Process Memory Locking. The working group felt that these were a little too rough for a formal review, so an extra three months was taken to get them into better condition. The April meeting should produce a draft for mock ballot.

Those two issues that prevented the draft from going to mock ballot also proved to be the most controversial yet. There was a heated debate about the realtime files proposal because some people wanted parts of the proposal to be mandatory for all implementations. The proposal would require all conforming implementations to implement an Extent Based File System (among the attributes of an EBFS is the ability to allocate a file in physically contiguous chunks). This issue went around the table several times but no final resolution was reached. The next meeting will (hopefully) complete these debates.

The memory locking proposal was reworked to allow an implementation that does not "stack" user requests. In the original proposal, the user was allowed to stack locks. The system was required to maintain information about each byte and the number of times the user locked that byte in memory. The draft 6 proposal will be much simpler then the one released with draft 5.

The committee also examined what future topics should be covered. First on the list is a threads (or light weight process) mechanism. The realtime committee will be addressing this issue directly after the first draft is finished (or before if some working group members get their way). There are currently a number of unique interfaces to threads, and selecting one for a standard should prove to be a major challenge.

The USENIX Standards Watchdog Committee contact for 1003.4 is Sol Kavy. He can be reached at:

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1003.6 – Security Extensions to POSIX

The security working group is currently working on a number of topics in parallel – Auditing, Discretionary Access Controls (DAC), Mandatory Access Controls (MAC), and Privileges. As these topics have been described in detail in previous installments, I won't do it again. Instead, here is a brief summary of topics of interest being discussed in those sub-committees:

MACs: The group decided to accept one proposal before them as a baseline. This will help them to decided on their exact scope of operation and also to decide on their goals. This baseline proposal has not solved even a small percentage of the problems facing this committee. Things like information label mechanisms, data transport, text label format, label constraints, and security for public/shared directories were too abstract at this time, the group decided to ask for white papers to talk about them at the April meeting.

AUDIT: This group has embraced a proposal as a base. This proposal, in conjunction with a proposal from X/Open, will probably be the primary source in this area.

DAC: This group was finally able to resolve some of the issues that have been in dispute since its creation. In particular, the group was able to agree on: The representation of an Access Control List (ACL), Ordering, Default ACLs, and most importantly the issue of how ACLs are to be used in the system. ACLs will be an additional security mechanism, which much be enabled by explicit user action. This satisfies the requirements of the 1003.1 standard, which had left room for just such a mechanism by leaving some weasel-wording in the definition of File Group Class. The specific mechanism will be that the permissions available to users (or groups) listed in an ACL will be a subset of those available using the traditional group permissions of the file.

In addition, the inheritance of ACLs was discussed. It appears as if the group will agree that the ACL for a directory will propagate to any sub-directories that are created. However, this is still an issue and will be debated at the April meeting.

In addition, the group agreed that there will be routines in the standard for manipulating each type of ACL, and that named or shared ACLs will not be in the standard.

PRIVILEGES: The principle of least privileges requires that each subject in a system be granted the most restrictive set of privileges needed for performance of authorized tasks. The principle of Least Privilege will also include the concept that each privilege is available for the minimum scope of execution required to perform the task for which it is needed.

The purpose of privileges is to assure the authorized and restricted use of a service. Security relevant code can be bracketed and the privileges may be enabled only during execution of that part of a program.

Issues that need to be addressed by this group include:

- To what degree can privileges be segmented to allow control over individual privileged actions?
- How can a designer of a privilege propagation mechanism assure compliance with the principle of least privilege?
- How can user access to privileged operations be limited in accordance with the principle of least privilege?
- What control interfaces are necessary to allow privilege mechanism?

The group has agreed that no privilege should grant access to more than a single set of related operations. The group also agreed that the propagation of a privilege from one "subject" (process) to another should be strictly controlled. Because traditional implementations propagate privilege based on the effective user ID of a process, any secure implementation will have to permit this behavior. However, to permit for more secure software being developed in the future, it is necessary to provide some primitives that will

permit a parent process to restrict which privileges are propagated to its children.

The standard will be defining a set of interfaces for accessing privileged operations. These interfaces will allow for: Reducing the level of privileges, setting, creating, or adding privileges, acquiring privileges, testing for privileges, requesting a privilege type, setting privilege propagation, requesting a set of maximal privileges, determining the set of privileges currently enabled, determining the success or failure of privilege accumulation, and creating of privileges not in the current set.

The scope of this committee is to define extensions to the POSIX interface which support a privilege mechanism capable of enforcing a "Least Privilege" security policy, and a minimum set of privileges which are necessary to support such a policy in a portable applications environment.

The USENIX Standards Watchdog Committee contact for this group is Anna Maria de Alvare. She can be reached at:

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1003.7 - System Administration

At the first official meeting of the 1003.7 working group, John Quarterman presented a USENIX concern about the direction that the working group seemed to be taking. USENIX was concerned about the "single machine" model which was being suggested by the working group for designing tools and utilities. USENIX felt that if a single machine model were used, it would be difficult or impossible to extend the utilities and interfaces adopted by the committee to a networked system. However, if the working group chose a model in which a machine was assumed to be part of a tightly coupled network, then a single standalone machine could be a simple special case of a networked machine.

After some deliberation, the working group adopted the USENIX model of a machine in a tightly coupled network. This has some rather far-reaching implications on the direction of the working group, as it is a different approach than that taken by 1003.1 and 1003.2. It will also mean that the group will be relying heavily on work and expertise from 1003.8 (networking). It also means that some of the concepts, such as a filesystem, which we thought we had a definition for, suddenly become much more complex.

In addition, it means that the working group will be reviewing several documents which reflect prior art in the area of networking, such as the CMIP, ASN.1 and SMNP networking protocols. These protocols will be reviewed at the next meeting.

A number of areas are affected by networking implications. Some of these are difficult to resolve, since things like device management, print spooling and performance monitoring, to name a few, may want to cross a network. The working group is still undecided about the direction which is going to be taken here. The two obvious options are to provide for centralized administration of a network of machines, allocating and deallocating devices over the network from central spot; or a decentralized model in which each machine in responsible for administering the devices connected to it. This will be reviewed at the next meeting.

Although this was our first meeting, a substantial amount of work was done by the working group. The first two days were spent reviewing global issues to the working group, such as determining direction, reviewing IEEE procedures, discussion of previous informal meetings of the system administration group and discussion of which model to choose. Once all of this was done, the working group split up into small groups and focused on the areas which needed to be addressed. Specifically, the areas being addressed are:

Process Management
Spooling Management
System Startup/Shutdown
Communication Management
File Systems Management
Performance Monitoring
System Accounting
Device and Media Management
Software Management
User Administration
System Monitoring

Miscellaneous
Introduction

Some items of note:

Spooling Management: The System V spooling mechanism was chosen as a model for the working group. This model has been adopted by X/Open. It was recognized by the working group that the current System V *lp* interface does not adequately support networking. The working group felt that it could be extended to support networking relatively easily.

Communications Management: The committee will review the CMIP, ASN.1 and SMNP protocols to determine if and how these protocols may fit into the work that the working group is doing. In addition, UUCP managed to rear its (useful but ugly) head here. Even though 1003.2 has parts of UUCP within its scope, this committee may need to address the issues of UUCP administration.

File System Management: The biggest problem here will be defining what a file system really is. 1003.7 will be looking to 1003.8 for help in defining the concept. However, the group has realized that even without a definition it will be useful to be able to mount, unmount and check file systems.

Performance Monitoring: The performance monitoring group has followed the lead of the /usr/group performance monitoring committee. This is hardly surprising considering that the technical reviewer for this section is the chair of the /usr/group performance monitoring committee. Their model seems reasonable, and in fact represents prior work in this area.

System Installation: An inordinate amount of time was spent drafting an objection to the AIU facility described in 1003.2. The object will be submitted to 1003.2 as an objection from the 1003.7 working group. There are a number of concerns about the application installation which many in the working group and outside of it feel are not able to be addressed by a rigidly-defined installation utility. Work progresses in spite of these concerns.

The working group submitted a substantial amount of work to the technical editors. The editors have now collated all of this information and produced a draft that will be discussed at the April meeting. Although this document may not be suitable for release, it will at least provide a framework for development for the working group.

Obviously, the work has just begun, but so far a fair amount of progress has been made, and hopefully, more progress will be made in future meetings.

The USENIX Standards Watchdog Committee contact on 1003.7 is Mark Colburn. He can be reached at:

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(612) 224-9108

2.10.1BSD Release Available

The second release of 2.10BSD is finally available! It has been designated 2.10.1. Although the changes are fairly simple to describe, they cover large portions of the distribution. Most will not be visible to either users or administrators; specifically, no recompilation is necessary. Administrators should be aware that the 4.3BSD disk quota system is now available. Due to address space considerations, however, it is expensive to run. Also, the source for the on-line manual pages has been rearranged as per the 4.3BSD-Tahoe release.

The major change, and the reason for the second release, is an extensive reworking of the kernel to move the networking into supervisor space. This move eliminated most, if not all, of the instabilities seen in the original networking provided with 2.10BSD; it also doubled the speed of, for example, file transfer. As encouragement to sites that encountered difficulties in using the networking in the first release, or encounter difficulties in this release, we have beta sites that have been running for months without crashing, as well as sites with fifty nodes. We are, however, still suspicious of the DEQNA driver...

In application land, many missing pieces of the 4BSD distribution have been added, most notably the FORTRAN compiler and library and the line printer sub-system. Many other programs have had minor (and not-so-minor) fixes applied.

Keith Bostic
Casey Leedom

Because the changes to the kernel are major, no "upgrade" tape will be available. 2.10.1 BSD is only available as source, to appropriate licensees of V7, System III, System V, or 2.9BSD. The cost is $200, prepaid.

The release consists of two 2400 foot, 1600 BPI tapes (approximately 80Mb) and approximately 100 pages of documentation. If you require 800 BPI tapes, please contact USENIX for more information.

If you have questions about the distribution of the release, please contact USENIX at:

2.10BSD
USENIX Association
2560 Ninth Street, Suite 215
Berkeley, CA 94710

+1 415 528-8649
office@usenix.org

If you have technical questions about the release, please contact Keith Bostic at:

{ucbvax,seismo}!keith
keith@okeeffe.berkeley.edu

+1 415 642-4948

NOTE: There are a few copies of 2.9BSD available. If you do not have split I&D and want to run UNIX on your PDP-11/x, write the USENIX office.

Final Printing of 4.3BSD Manuals

The USENIX Association offers all members of the Association the opportunity to purchase 4.3BSD manuals.[†]

The 4.3BSD manual sets are significantly different from the 4.2BSD edition. Changes include many additional documents, better quality of reproductions, as well as a new and extensive index. All manuals are printed in a photo-reduced 6″×9″ format with individually colored and labeled plastic "GBC" bindings. All documents and manual pages have been freshly typeset and all manuals have "bleed tabs" and page headers and numbers to aid in the location of individual documents and manual sections.

A new Master Index has been created. It contains cross-references to all documents and manual pages contained within the other six volumes. The index was prepared with the aid of an "intelligent" automated indexing program from Thinking Machines Corp. along with considerable human intervention from Mark Seiden. Key words, phrases and concepts are referenced by abbreviated document name and page number.

While two of the manual sets contain three separate volumes, you may only order complete sets.

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[†] Tom Ferrin of the University of California at San Francisco, a former member of the Board of Directors of the USENIX Association, has overseen the production of the 4.2 and 4.3BSD manuals.

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Since this article was last published in the September/October 1988 issue of *;login:*, there have been several additions and changes to the GNU software available. The major ones are detailed in the following paragraphs. Almost all of the other older software on the tapes have been updated to newer versions.

Three new manuals have been published for Gawk, GNU Make, and Bison (GNU's parser generator, which is mostly compatible with YACC).

Added to the GNU Beta Test tape are:

a beta release of G++, the GNU C++ Compiler;

the GNU implementations of Diff, Tar, Grep, and Egrep;

GnuPlot, an interactive program for plotting mathematical expressions and data;

Ghostscript, GNU's graphics language, which is almost fully compatible with the postscript language and supports X version 11;

and the freed files from the U.C. Berkeley 4.3-Tahoe release, which include complete sources for some utility programs and games, as well as library routines and partial sources for many others.

Added to both the GNU Beta Test and GNU Emacs tapes is *texi2roff*, a program that translates GNU Texinfo files into a format that can be printed by the UNIX [nt]roff programs utilizing the mm, ms, or me macro packages. It is included so that people who don't have a copy of TeX can print out GNU documentation.

Due to the increase in size of X11R3, the X Window System has moved to its own tape. X11R2 had been on the Beta Test tape.

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Local User Groups

The USENIX Association will support local user groups by doing an initial mailing to assist the formation of a new group and publishing information on local groups in *;login:*. At least one member of the group must be a current member of the Association. Send additions and corrections to *usenix!login*.

CA - Fresno: the Central California UNIX Users Group consists of a *uucp*-based electronic mailing list to which members may post questions or information. For connection information:

Educational and governmental institutions:

Brent Auernheimer (209) 294-4373
brent@CSUFresno.edu or csufres!brent

Commercial institutions or individuals:

Gordon Crumal (209) 875-8755
csufres!gordon (209) 298-8393

CA - Los Angeles: the Los Angeles UNIX Group meets on the 3rd Thursday of each month in Redondo Beach.

Drew Bullard (213) 535-1980
ucbvax!trwrb!bullard

Marc Ries (213) 535-1980
{decvax,sdcrdcf}!trwrb!ries

CO - Boulder: the Front Range UNIX Users Group meets monthly at different sites.

Steve Gaede (303) 938-2985
NBI, Inc.
P.O. Box 9001
Boulder, CO 80301

{boulder,hao}!nbires!gaede

FL - Coral Springs:

S. Shaw McQuinn (305) 344-8686
8557 W. Sample Road
Coral Springs, FL 33065

FL - Melbourne: the Space Coast UNIX Users Group meets at 8pm on the 3rd Wednesday of each month at the Florida Institute of Technology.

Bill Davis (407) 242-4449
bill@ccd.harris.com

FL - Orlando: the Central Florida UNIX Users Group meets the 3rd Thursday of each month.

Mike Geldner (305) 862-0949
codas!sunfla!mike

Ben Goldfarb (305) 275-2790
goldfarb@hcx9.ucf.edu

Mikel Manitius (305) 869-2462
{codas,attmail}!mikel

FL - Tampa Bay: the Tampa UNIX Users Group meets the 1st Thursday of each month in Largo.

Bill Hargen (813) 530-8655
uunet!pdn!hargen

George W. Leach (813) 530-2376
uunet!pdn!reggie

GA - Atlanta: meets on the 1st Monday of each month in White Hall, Emory University.

Atlanta UNIX Users Group
P.O. Box 12241
Atlanta, GA 30355-2241

Marc Merlin (404) 442-4772
Mark Landry (404) 365-8108

MI - Detroit/Ann Arbor: The SouthEastern Michigan Sun Local Users Group meets jointly with the Nameless UNIX Group on the 2nd Thursday of each month in Ann Arbor.

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K. Richard McGill
rich@sendai.ann-arbor.mi.us

Bill Bulley
web@applga.uucp

MI - Detroit/Ann Arbor: dinner meetings the 1st Wednesday of each month.

Linda Mason (313) 855-4220
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MN - Minnetonka: meets the 1st Wednesday of each month.

UNIX Users of Minnesota
545 Ashland Avenue #3
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Scott Anderson (612) 688-0089
scott@questar.mn.org

MO - St. Louis:

St. Louis UNIX Users Group
Plus Five Computer Services
765 Westwood, 10A
Clayton, MO 63105

Eric Kiebler (314) 725-9492
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NE - Omaha: meets on the 2nd Thursday of each month.

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Omaha, NE 68144

Kent Landfield (402) 291-8300
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New England - Northern: meets monthly at different sites.

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Hanover, NH 03755

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Daniel Webster College
University Drive
Nashua, NH 03063

decvax!dartvax!nneuug-contact

NJ - Princeton: the Princeton UNIX Users Group meets monthly.

Pat Parseghian (609) 452-6261
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Princeton University
Princeton, NJ 08544

pep@Princeton.EDU

NY - New York City:

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New York, NY 10116

Ed Taylor (212) 513-7777
{attunix,philabs}!pencom!taylor

New Zealand:

New Zealand UNIX Systems User Group
P.O. Box 13056
University of Waikato
Hamilton, New Zealand

OK - Tulsa:

Pete Rourke
$USR
7340 East 25th Place
Tulsa, OK 74129

PA - Philadelphia: the UNIX SIG of the Philadelphia Area Computer Society (PACS) meets the morning of the 3rd Saturday of each month at the Holroyd Science Building, LaSalle University.

G. Baun, UNIX SIG
c/o PACS
Box 312
La Salle University
Philadelphia, PA 19141

rutgers!{bpa,cbmvax}!
temvax!pacsbb!{gbaun,whutchi}

TX - Dallas/Fort Worth:

Dallas/Fort Worth UNIX Users Group
Seny Systems, Inc.
5327 N. Central, #320
Dallas, TX 75205

Jim Hummel (214) 522-2324

TX - San Antonio: the San Antonio UNIX Users (SATUU) meets the 3rd Thursday of each month.

Jeff Mason (512) 494-9336
Hewlett Packard
14100 San Pedro
San Antonio, TX 78232

gatech!petro!hpsatb!jeff

WA - Seattle: meets monthly.

Bill Campbell (206) 232-4164
Seattle UNIX Group Membership Information
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uw-beaver!tikal!camco!bill

Washington, D.C.: meets the 1st Tuesday of each month.

Washington Area UNIX Users Group
2070 Chain Bridge Road, Suite 333
Vienna, VA 22180

Samuel Samalin (703) 448-1908

EUROPEAN UNIX® SYSTEMS USER GROUP NEWSLETTER

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Editorial

Alain D. D. Williams
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Parliament Hill Computers Ltd

Vienna

By the time that you read this you will only have a short time to ensure your place at the Autumn EUUG conference in Vienna. You will find a list of tutorials and a provisional technical time table on pages XX.

The line up looks good, a flavour of EUUG conferences can be gained by looking at the abstracts for the papers delivered in Brussels this spring – see page xx.

I will be there, will you?

FORTRAN Benchmarks

In the days when I started programming to produce a portable program meant writing in FORTRAN – BCPL was never widespread enough and C was B. FORTRAN is still a popular and important language.

Nhuan DoDuc looks at portability from a direction that will probably surprise many a Unix and C hacker – although it shouldn't.

Strategy Meeting

In early May an EUUG strategy meeting was held in Dublin. The job of those present was to refine the direction of the EUUG, ie what is the purpose of the EUUG.

Much was discussed, Norman Hull present a viewpoint on what happened on page xx. Read it, it is important, if you have strong feelings about what is mentioned don't keep quite write and tell me or any member of the EUUG executive.

Some of you will soon receive a survey letter from the EUUG, please help us to help you by completing it and returning it.

Group Reports

In this issue you will find the regular reports from the Netherlands and UK groups, and the first from the new Portugese group.

Did you know about the Unix group in Israel? You can find out what they are up to on page yy, just before the regular report from Usenix.

Regular Columns

William Roberts continues his tour of the World of Windows and examines how text is displayed on bitmap screen, it is not as easy as it looks.

Janet Davis has some guest writers who delve a little into some aspects of the OPEN LOOK toolkit, part of Windows AT&T style. Just because it is AT&T doesn't mean that it will become standard, life is not that simple. Dominic Dunlop gives you his view on page xx as to what the confusing standards world has been up to recently; he will also be speaking at Vienna – so if you don't understand what he has written you will be able to ask him yourself.

After you have spoken to Dominic you can collect your conference tape. I don't know what Frank Kuiper will have in store for us, but you can see what he has done so far on page ff.

Most of this software will have been taken from public sources, Donal Daly (page cc) will probably have reviewed some of it for you. If he hasn't written about your favourite bit of software, knock off a a few words about it and send it to him – he does a good job, but could do with a hand.

Laura Dekker

This is Laura's last newsletter, she is off back to college (UCL) to get a M.Sc., we wish her all the best.

Compatible FORTRAN Compilers

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DoDuc loves ice creams, likes to discuss cosmology and cosmogony, dreams of running benchmarks, uses FORTRAN more than COBOL, believes in C more than in Lisp, lives within UNIX more than within MS/DOS. He is an active member of AFUU where he participates in many working groups (e.g., Benchmark, Station de Travail, Calculateurs Scientifiques). Since his graduation in (theoretical) physics, he works within the DP activities of the French nuclear company Framatome, and presently with one of its affiliate, Framentec, an A.I. dedicated company.

Standardisation and Compatibility are real facts not limited to hardware or operating systems. This paper will browse through the FORTRAN compiler scene, as seen from an user's point of view, with some emphasis on MS/DOS and UNIX offerings.

Once upon a time, there were specific hardware families, closed operating systems and proprietary software such as compilers, etc... and of course very strictly regulated relationships between the different partners, clients and vendors. Then a strange and long awaited event occurred:[1] the new actors were the now standard microprocessors and standard operating systems; namely the Motorola and Intel *et al.* chips and boards and systems based upon them on the MPU side, and their companions, MS/DOS and UNIX on the OS side. Furthermore their arrival has greatly changed the scene since then. The modifications are probably definite and irreversible to the behaviour of every player of the trade, users and suppliers alike.

1. but probably neither predicted nor expected

Why another FORTRAN compiler?

Certainly, there are many explanations for the appearance of compatible compilers, i.e., equivalent compilers within the same environment; some of them are economic and others are similar in nature to those prevailing in the domain of hardware compatibility

Two other explanations, however, are worth mentioning: (1) some native, or bundled, compilers are frankly so bad, in any sense of the term, that they should be considered a mockery; (2) some people with much of experience in writing compilers on mainframes are only too glad to try their entrepreneurial imagination on friendlier or more popular machines, and please don't forget that this is a really hard job, which, up to now, is somehow underestimated by most systems designers and integrators.

This paper is *not* a survey of the domain, it cannot be thorough or complete. Such a survey remains to be written. It is only a narration by a good (uh!

uh!...) FORTRAN user who wishes to limit himself to existing or locally available products, more precisely in France. Also, it will cover essentially the MS/DOS and UNIX offerings.

A Precursor

The birth of a compatible compiler is only possible if the (operating) system is widely used and if the bundled compiler has some glaring shortcomings, in functionality or in performance. One good example is the WATFOR/FIV family from the University of Waterloo. People are not exactly happy with the debugging capabilities of the existing IBM's FortG1 or Fort 4.H.extended, and so built their own compiler, the ANSI66-compliant WATFOR and its ANSI77 counterpart WATFIV. With much deserved success, although not quite widely used outside academia, it has been ported to the VAX/VMS and recently even to the MS/DOS world.

The MS/DOS World

Much like Venus, MS/DOS was born *naked*, and the first compilers were in fact hazardous things to use. Of course here Microsoft reigned supreme, and not until 1985 was version 3.31 capable of functioning correctly, especially in the support for ndp (e.g., 80x87) codes. People were in such a desperate mood that IBM was able to market its version 1, which is an early version of the Microsoft product; however the product was so lamentable that people became really desperate until the appearance of IBM Professional FORTRAN 1.0, which is none other than a licensed version of a Ryan McFarland product. This product and the version 2.11 marketed directly by Ryan Mc Farland proved to be good, robust and performant, proof of the real know-how of their creator. For some time, the version 2.11 was acclaimed as the most performant compiler for big fat applications downloaded from mainframes, and especially in the domain of numerical computation.

Around 1985, many compilers arrived on the market, most of them quite quickly and thoroughly evaluated by many serious reviewers, another proof that they were really awaited, being part of the processing departmentalisation phenomena. In this serious and hard arena, too, there is of course no clear winner[2] but there are excellent compilers and there are average ones. As with any other product, the user has to make up his/her mind regarding his/her specific needs and preference.

The MS/DOS World: the Leaders

The fastest (and of course still accurate) in execution time is still the Ryan McFarland product whose authors were busy developing IBM mainframe compilers since the sixties. However compilation time is incredibly long and probably prevents its use in the development stage where global optimisation is not required. Recently Austec, the trade name of the new merged company, released version 2.4, with some improvement in compilation time, and most notably RM/Forte which is a really impressive programming environment, with menu-driven and multi-window display, source-code manager, (UNIX)make-like capability, context-sensitive help... all the niceties that you always wished to have for your daily work...

The fastest (and of course with excellent and clearly understandable diagnostic message) in compilation time is still, and by far, the Lahey product present on the scene since 1984. One particular functionality deserves to be mentioned: the Source On Line Debugger; the compiler generates *.SLD files (along with the *.EXE and *.LST files) which store everything needed for a full debugging process: this original idea allows the simple deletion of *.SLD when the debugging is over (and if disk space runs low, which invariably *is* the case); the *.EXE files do not contain any debug instruction that may slow down execution or that need to be stripped off as usually done elsewhere. In summary, the Lahey product, with many extensions targeting the mainframe (e.g., IBM and Vax/VMS) environment as well as the Dos environment is quite probably the best choice for the early development or porting stage of big size code.

Microsoft, the front player on the scene, has never given, and still does not, any thought to FORTRAN. Logical to its business, it has put emphasis first on Pascal then on C, the two most

2. e.g., no compiler benchmark, at least not yet and quite probably never!

popular languages which successively were used to write the FORTRAN compiler, but this should not surprise us. As a matter of fact, the version 3.31 has a definite 'parental' relationship with Pascal, while the 4.xx version is simply the FORTRAN front-end to the new generation of C-based compilers. Clearly Microsoft has taken the challenge about developing a whole new compiler family (e.g., with *front end* (that analyses and parses the source language statement into an intermediate language)—*optimiser* (that does the really hard home work)—*code generator* (or back end, that generates native code for a specific processor)), using the newest and latest proven technology. Nothing needs to be said about these compilers except that, like IBM products, they bear the Microsoft trademark. They do not show any notable feature: the version 4.xx now seems to be as fast as other competitors, the CodeView debugging facility is acceptable but this is *not* specific to the FORTRAN compiler. Perhaps we should mention the availability of different numerical emulations or code generations... At the time of writing, Microsoft has just announced version 5.0 of its Optimising Compiler.

The MS/DOS World: the Others

Digital Research's latest product version is 4.1. This is a plain vanilla compiler without specific plus or minus. However, if an anecdote must be told about it, the author may mention that (but this should not be taken as a criticism against the product), that when emulating the 80x87 extended (e.g., 80 bits) precision, it is much slower than any competitor.

Prospero Software supplies two compilers: Pro FORTRAN 66 and Pro FORTRAN 77, presently respectively at version 2.15 and 1.26. Another plain vanilla family of compilers, except that the family does cover many other *non MS/DOS* environments such as CP/M and CP/M-86, Sinclair QL. A very interesting point: the version 2.13 of Pro FORTRAN 77 for GEM for the Atari ST family (and with support for the 68881) is apparently the *only working* FORTRAN compiler for it.

For the sake of completeness, Ellis Utah FORTRAN must be included. While it is the cheapest compiler, it is also the only one which *does limit* the code to 64Kbytes and the data to 32Kbytes, clearly an unacceptable constraint for real scientific programming. Lastly, the author has seen mentioned a Supersoft FORTRAN-66, version 1.07, but has no details about it and has not yet seen it. Just for the record.

The 'Extended' MS/DOS Compilers

The only too well known 640Kbytes usable memory limit has proven to be too much for users accustomed to mainframe addressing capabilities. From another point of view, it's too tempting to exploit the full functionalities and power of the i286 and i386[3] and Weitek chips. This conjunction results in a new category of compilers that can still be used within *good old* MS/DOS, but through some *DOS extenders* can tap, at run time, the whole performance of these 32-bits chips.

At the present time, the author has found four of them. The oldest and probably the fastest comes from Silicon Valley Software[4] already well known for their good products for many UNIX boxes. Microway, the specialist in numerical processing for PC, created the first MS/DOS compiler that was able to generate code for the Weitek chip, which resulted in an incredible jump of execution speed in heavy number-crunching problems. Polyhedron Software markets FTN77/386, developed by those men from Salford University who created the FTN77 compiler for Prime machines. While these three compilers specifically target i386 machines (and require i387 co-processors), Lahey offers two *protected mode* products: F77L-EM/32 is meant for i386 machines while F77L-EM/16 can already fully exploit the i286 characteristics, for instance 15Mbytes (instead of 32Mbytes) of usable memory. It's a tribute to Lahey's competence to mention that their most famous feature, namely compilation speed, is still present at least with F77L-EM/32 as tested by the author. Lahey and Salford also announce support for Weitek chips, a real proof of good democratisation in the crowded MS/DOS world (the author thinks that SVS FORTRAN does support Weitek chips but was not able to check or test this).

All these compilers deserve high marks: the products are all solid, reliable and performant. "Mainframe functionalities and performances on

3. and now the i486 too!
4. just merged with Trio Software System

a PC'', we might say.

The OS/2 Picture

The future of OS/2 might be as bright as its present is currently dark: the author is not imprudent in predicting a bleak future knowing that neither IBM nor Microsoft are dead yet. But one must recognise that: (1) there is no incentive (e.g., only promise and many advertisements, but no action) from either of them to push users to migrate toward OS/2, (2) OS/2 offers virtual memory management while any dos-extender uses real memory, (3) UNIX is real, sound and safe, and if statistics on very small data have any value, the author must state that in every case he knows of where escape from MS/DOS (or downloading from IBM mainframe) was mandatory, UNIX was chosen.

So just for the record, one can mention some 'paper tigers': IBM FORTRAN/2 and Microsoft 4.1, as well as some *tigers-to-be*: Austec Ryan McFarland, Prospero, Lahey...

IBM FORTRAN/2, up to now version 1.0, like IBM Professional FORTRAN, is a licensed product from Austec (Ryan McFarland) while Microsoft is the same version 4.1 that can be used in any of the two OS. These two compilers are unsensational which should cause you not to regret not going the OS/2 way. At least not yet.

The UNIX World

UNIX originally blossomed in the world of the mini-computers, i.e., between the mainframe world where the compilers are usually supplied with the hardware without much choice left to the user, and the micro world, where none is provided to the casual user. Another specific point is the existence, within any UNIX software source, of a f77 compiler.[5] However this compiler and BSD's are particularly ineffective or inefficient on many systems, therefore their existence means next to none.

5. ATT recognises that f77 is part of any SystemV-compliant release, however not every supplier acknowledges this fact, perhaps wishing to push their own third party compiler(s)? Is Sun OS 4.x SystemV-compliant?

The UNIX World: the Main Players

A commonality exists among users of Sun, DEC, HP, Apollo... machines, which traditionally remain linked to the bundled compilers, as they did when they were with the old mainframe. Most of them dare not explore anything new or exotic alternatives, which of course may be risky. Credit must however be given in that these manufacturers have tried their best to supply a correct or acceptable product. However system integrating and compiler writing are clearly two distinct businesses, and so fortunately it may happen that users will get some choice.

If HP and Sun compilers are good and sound products, there is no excitement in using them. The HP compiler seems to have reached its 'cruise' performance long ago and so no big improvement, in functionality or in performance, is expected (except towards Vax/VMS extensions). The Sun compiler is currently at a critical stage in its life. F77 Revision 3.2, BSD derived, is the first and foremost compiler from Sun still widely used on many Sun 2 and most Sun 3; a very honest compiler, usually accepted because it is bundled with the Sun OS, without question by almost all users who don't care, or don't dare to care, about better alternative. With the Sun 4 and then the Sun 386, a major effort was set up to write f77 1.1 which has now evolved, with the necessity to support different combinations of MPU (68K,i386,Sparc...) and FPU (Sky board, Weitek, Texas...), to f77 1.2. Clearly the imperative of compatibility across too wide a range of chip results in a heavy burden for the manufacturer for whom FORTRAN has never been a high priority.

The ULTRIX user has at the present time 3 compilers. If his machine is a DEC Station 3100, or a DEC System[6] then his only compiler is none other than the version 1.31 from Mips. If he works on a Vax architecture machine, then he has two compilers available, one originating from BSD that he *can* put aside in his private museum or vault, another which *is* the well known compiler from VMS, that he *will* use for daily work as he would do on VMS machines. At last, it is not too early for ULTRIX users to get permission from

6. 3100 too!, the *twenty* is long dead gone five years ago.

DEC to work seriously: *les vacances sont finies!*.

The Apollo compiler is a class of its own, a living process with continuous performance improvement at each major release. The compiler is closely bound to the Motorola instruction set and exploits every advantage of the Motorola chips. A definite proof is contained in the way it uses the FPA chip (which is a Weitek 3164). Any other compiler, asked to generate code for the Weitek chip, will faithfully and blindly give the execution of transcendental functions to the Weitek math library, whereas these functions being wired in the 6888X (and also in the 80X87) should be executed there. Perhaps the rationale for not doing so is the necessity and the ability for such an executable file to run even in the absence of the 6888X chip? This deed, with an old and dead exception, to the best of the author's knowledge, is unique among FORTRAN compilers. This and other similar facts auger well for the overall performance[7] of the pair compiler + Prism processor in the future (alas, if any).

In the realm of RISC processing and out of any market-driven and biased debate, the compiler is much, much more than a system utility, and many RISC-processor-based systems suddenly appear much less advantageous simply because of the bad behaviour or poor performance of the compiler. Unlike many 'CISC' compilers which are usually written once their system is up, 'RISC' compilers could not be treated as an added-value gadget; it's clear that when you just translate '(*existing*) machine-independent intermediate representation code' into specific code for a *new* processor, you are *not* and you *cannot* completely exploit and harness the full potential of this new processor. But to 'parallelise' the design of the processor and of the compiler is a very risky process and, in having done so, Mips, which is now releasing version 2.0 of its f77, is harvesting fully deserved compliments. Now this does not mean that Mips' compiler is bug-free: give me a compiler and I'll show you a list of bugs (sorry, unbelievable constructs of code that is sure to fool any honest compiler) but then this is one of the two compilers (e.g., with Apollo Prism's) for RISC processor that I would recommend for your evaluation.

7. just compare the two releases 10.5(15) and 10.7(21)!

The UNIX World: the Third Parties

For most of the other manufacturers, concern about a FORTRAN compiler is less than nil: after all, FORTRAN may not be their main business. They just port or license third-party compilers. Some of these are enumerated below.

Greenhills compiler family, also marketed under the trade name Oasys, and now just merged with it, is certainly the most well known if only because it is widely used in many environments. Since the BSD and the ATT f77s are too bad products, any integrator who doesn't bother about creating his own compiler would just look for a compatible compiler, and Greenhills' gf77, now generally at version 1.8.x, is clearly the most frequently selected, a tribute to its quality and performance level. To name a few systems that have chosen gf77: Apple, Edge, Bull, Intergraph, Ridge, AMD... and a few compilers that have grown out from gf77: Unisoft, Microway, Mercury... Perhaps the main reason for this success is, beside the fact that the family grows around the triplet (front end - optimiser - code generator), that gf77 already works on more platforms than any other competitor: 68K, i386, NS32000, Weitek, Ridge, Clipper... and soon on the i860 too.

SVS compiler, just as good as Greenhills's, is somehow less widely seen, probably because of its way of selling the product (e.g., no direct sale); we may encounter it on 68K machines like NCR Tower, Definicon boards... on i386 machines like Prime EXL... Nkr compiler is a recent competitor and up to now seems to stay only within 68K machines: Sun 3, Mac (A/UX), Sony News, Integrated Solutions... LPI although also a newcomer is also offering a multi language family that seems quite promising; the product for the Sun 3 is at version 3.00 and still does not support the FPA (Weitek chip); the product for i386 machines running under XENIX is frequently bundled in many offerings, e.g., SCO, Data General Dasher... Philon is the last player with offerings for 68K machines (NCR Tower, Plexus... and of course Sun 3), but also for CCI and ATT's 3B series (DEC ULTRIX too?).[8]

8. There are rumours about possible merging between Philon with another well known compiler company.

TopExpress is also a late comer for which not much is known about.

So You Want MS/DOS and UNIX Altogether?

Some compilers may have versions for MS/DOS *and* UNIX. The best known is Ryan McFarland version 2.11 probably because it is old and runs under XENIX; so does Intel's FORTRAN-286. The third compiler for XENIX-286 is version 3.31 from Microsoft: at first glance it looks like version 3.31 for MS/DOS but on using it, it seems to be less sophisticated than the MS/DOS version. Microway's mf77, now at version 1.4 as for its MS/DOS cousin, runs only under System V release 3.x on i386-based machines but does so rather well, supporting of course Weitek code. LPI claims that it also runs on MS/DOS: however the MS/DOS version is not available in France. It has been already stated above that SVS runs on MS/DOS.

The Mac World

Practically nobody is working in FORTRAN within Mac/OS; nevertheless there are many compilers that are good and solid but not very performant. Version 2.20 from Microsoft is as good as the MS/DOS version 3.x except for co-processor support: there is none to support!. Absoft's product is another plain vanilla one. DCM FORTRAN from Dataproducts is the best choice, having most of the features usually encountered elsewhere: library manager, symbolic debugger, unlimited program and data size, interface to C and Assembly... even support for numeric co-processor (e.g., M68881) if present; the genesis of this product deserves an explanation: it was initially developed on specification and for private use by a big industrial company who has much invested in Mac hardware, and then subsequently marketed, apparently with some success. Recently Language Systems Corp. announced FORTRAN in MPW, where the most interesting part is MPW, the acronym for MacIntosh Programmer's Workshop; this product is not yet available in France.

A/UX is not even two years old yet that we are already being supplied with good and solid compilers. Version 1.8 of gf77 is as good as the equivalent products for other UNIX boxes. The Optimising Compiler from Unisoft should be even better. Nkr's version 2.0 is presently the best choice. If Absoft's FORTRAN, not yet released, is simply the UNIX port of the Mac OS version, then we shall have yet another more *odourless and colourless* plain vanilla FORTRAN.... This situation seems to prove that (1) A/UX and the FORTRAN compilers give the impression that the breakthrough by Mac into scientific and engineering processing is possible and nearing, and (2) portability, standardisation, and compatibility in UNIX are not empty concepts.

The DEC/Vax World

Most certainly a notable share of the popularity and credibility of Vax/VMS amongst university and scientific users is due to the quality of the VMS FORTRAN compiler. Some ardent partisans even use it for reference results in numerical accuracy comparison. There is no reason for this entry, about the Vax/VMS compiler, in this paper, if not as an illustration for a rule and its exception: the author knows for sure that there is *no*[9] compatible compiler here, and is willing to bet *une bouteille de vin mousseux* on this. As a matter of fact, there is another reason to mention this Vax/VMS compiler here: being one of the first ANSI 77 compliant (1978-1979), it does attract users and being widely accepted, it can allow *Vax/VMS extensions*. These extensions are so widely used that, now, for most f77, they become an unavoidable must: in some sense, all these f77 are Vax/VMS FORTRAN compatible compilers!

The IBM Mainframe World

FORTRAN 4 H developed for the IBM System/360 between 1963 and 1967 and then *extended* in 1973 to include new features available in the System/370 account for most of the scientific processing on IBM (and PCM) mainframes throughout the sixties and seventies. There even exists an Extended Optimisation Enhancement version of Fort 4.H released in 1978 under pressure from some big and prestigious users who not only had the need for ever increasing performance and/or functionality, but also care to voice firmly for it. VSFORTRAN, ANSI 77 compliant, which appeared at the beginning of the eighties, did not meet the promises of the supplier and the expectations of

9. other than the Waterloo product mentioned earlier.

the users,[10] at least not until version 2 well into the mid-eighties. The mature VSFORTRAN now de facto became the FORTRAN element of IBM's SAA; it is one of the two compilers available for the PC/RT and the only one for the PS/2 if you stay with AIX. Most curiously, this PS/2 AIX vs compiler, common to C and Pascal, strongly suggests that this is a new offspring and hence a question: how or how much 'vs' is this common compiler with respect to the mainframe homonym?. However, with the perceptible (*but is this a mirage?*) thrust from IBM into super-computing, especially the parallel processing domain, things may change quickly, yet it remains that, up to now, there is no excitement to use FORTRAN compilers from IBM.

In conjunction with the pseudo-compatible phenomena engineered by Fujitsu (and to a lesser extent by Hitachi) there is an ANSI 77 FORTRAN fully compatible for the MVS environment, whose most impressive particularity is the Fortune (to help interactively fine- and hand-tuning the code) and Vectune (to help squeeze the last vectorisable part of the algorithm) utility tools.

For completeness, it should be remembered that the Waterloo family does have a MVS member too.

The Value-Adders

Using supercomputers such as Cray is much like driving a sports car: every plain street-walker can settle for a casual trip, but to squeeze out the last percentage of performance required tons of experience or lots of help. The notorious Pacific Sierra Research Corp. with its Forge and Vast has set out to help people with this. In fact, its Vast, a vectorising precompiler is now bundled with the FORTRAN compiler on many machines: Sperry ISP, Cyber 205, ETA, Nas VPF, Convex, Stellar... and soon on the i860 ('a Cray on a chip'). Forge is meant to interactively help users in restructuring and optimising code for Cray computers; it is 'UNIX-based' (a must nowadays!) and is available on many 68K based machines, notably Apollo and Sun 3. Lastly, PSR also offers a kind of Virtual Array Memory Manager "to provide very large arrays in environment of limited resources" (!).[11]

Still many more companies strive to write new compilers and/or translators or produce new tools to improve existing investments: Digital Research, Tartan Laboratories... In the chapter of programming utilities, almost every CS Dept. of any university and many DP Dept. of most big FORTRAN industrial shops have developed some kind of FORTRAN syntax checker, beautifier, profiler or cross-reference analyser... for example, Forcheck, "a f77 verifier and programming aid" or Spag, the "spaghetti unscrambler" (also a pretty-printer) from Salford University, or Sabah, a listing analyser... In order to improve an existing compiler, HCR sells a kind of *portable* global optimiser that can be inserted into any compiler chain that does have an intermediate language generation. The company claims that such a product is used in many compilers on many machines: IBM PC/RT, CDC Cyber 180, DEC/Vax, Gould PN and NPL... Rapitech and Intrinsic sell translators from FORTRAN to C...

The Idealist

Kenneth Wilson, the Nobel-prize physicist, once declared imprudently that "FORTRAN should not be taught any more".[12] Fortunately not everyone has heard about his assertion, (and myself a simple-minded partisan of FORTRAN, am wondering if I should or should not be punished for reviving it?) and it might be that we will have great joy in welcoming soon a *gnu_f77*. Considering the past, the spirit, the accomplishment of the Free Software Foundation and the performance of *gnu_cc*, much can be expected and why not a nomination for FSF as the man of the year if such gnu_f77 exists? (what year? uh!).

10. how many of you were authorised and able to compile under TSO?

11. by the way, what did Seymour Cray say about real versus virtual memory?

12. he has reiterated recently in claiming that "A scientist who writes in FORTRAN is not a thinking scientist". What do these scientists think about this?

Further readings

Benchmarking FORTRAN Compilers, Avram Tetewsky, Byte, February 1984.
Serious FORTRAN, Chris Wolf, PC Magazine, Vol 4 # 26, December 1985.
FORTRAN Perspectives, John Voglewede, PC Tech Journal, June 1987.
Three FORTRAN 77 Compilers, David Burleigh, Byte, November 1987.
MS/DOS FORTRAN Roundup, Scott Robert Ladd, Computer Language, Vol 5 # 11, November 1988.
FORTRAN meets OS/2, John Voglewede, PC Tech Journal, December 1988.
Off the shelf, (a review by) Richard Morin, UNIX Review, Vol 6 # 8.
Tested mettle, (a review by) David Wilson, UNIX Review, Vol 7 # 5.
Ftn77/386, Mike Gunn and Arul Britto, .EXE Magazine, Vol 3 # 11, May 1989.

Some addresses in France

Greenhills/Oasys products by SCT Electronique, Antony.
Microway products by Elsa Software, Velizy or Softway, Paris.
LPI products by Top Log (Metrologie), Suresnes.
Austec Ryan Mac Farland products by AENI, Courbevoie.
Lahey products by Aquitaine Systemes, Paris La Defense.
Prospero products by Imaco, Paris.

and in the UK

Prospero, London.
Polyhedron Software, Standlake Witney or University of Salford, Manchester.
Austec, London.

C Traps and Pitfalls—Book Review

C Traps and Pitfalls
Andrew Koenig
Addison-Wesley ISBN 0-201-17928-8 (UK) Price £13.45, Paperback, 147 pp.
Reviewed by Lindsay F. Marshall, Computing Laboratory, University of Newcastle upon Tyne, UK.
email: Lindsay.Marshall@newcastle.ac.uk

Do not read this review. Go *now* and buy the book. You will not regret it and it isn't expensive. Everyone who programs in C will learn something new from reading it and will experience great relief when they see that other people are just as stupid and make the same mistakes as they do.

The book is really well written and a joy to read. There are some wonderful examples (I particularly like the ones for finding out if your C compiler nests comments or not) distilled from Bell Labs' years of experience of C programming. The only disadvantage I could see is that some of the horrors described could give you nightmares and put Stephen King out of business. Why are you still reading this? Go! Buy it!

(P.S. I didn't even get a review copy for this—I just wanted to tell people what a great book it is.)

EUUG Executive Report

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Helen Gibbons is also the business manager of the EUUG and is contactable at the EUUG secretariat.

The EUUG Executive Committee met again on 3rd July, 1989 in London, and spent some time in discussing the overall policies and finances of the Group.

The financial situation is at present stable, with a healthy but not excessive reserve, and the possibility of setting up ECU accounts and European Bank Accounts to make payments easier throughout Europe is being looked at.

Now that membership is approaching 4,000 members affiliated through 16 national groups, investigations are in hand to see if it will be possible to create a more meaningful corporate image to the outside world. The Governing Board agreed, at its meeting following the Dublin Workshop in May, that the logos of the National Groups should be aligned to the EUUG. A graphics company has been briefed to come up with an exciting new logo design and this will be discussed in more detail at the next Governing Board meeting which will be held on 23rd September, 1989 in Vienna.

To get a view of what this corporate identity should be and also to seriously assess what are the needs of members and how they can best be served, a survey is being conducted through a professional survey company. The survey is being sent to a 20% sample of members and the results should greatly help in directing the management of the Group.

Slide presentations on the Group are already in existence and are available for National Groups to use at their meetings from the Secretariat at Owles Hall.

Three new members have joined the Executive Committee in order to share the workload. These are Frances Brazier (Dutch Group), Norman Hull (Irish Group) and Johan Helsinguis (Finnish Group). Norman Hull will take on Internal Relations with the National Groups and Johan Helsinguis will cover External Groups.

Conferences continue to be a major part of the EUUG calendar and the next Conference in Vienna is already organised for 18th-22nd September, 1989. Bookings booklets containing the full provisional programme have already been sent out to all members. The Keynote Speaker will be Professor Ahmed Elmagarmid from

Purdue University in the States. Professor Elmagarmid is a specialist in the field of concurrency control for multi database systems. Full details for anyone who has not received their personal copy of the Bookings Booklet are available from the Secretariat at Owles Hall.

For the first time there will be a mail service at the Vienna Conference.

Future conferences are being organised in:

Munich, West Germany 23 - 27 April, 1990

Nice, France 22 - 26 October, 1990

Tromso, Norway 20 - 24 May, 1991

Budapest, Hungary 16 - 20 September, 1991

Mr. Dominic Dunlop has now taken up his role as Standards Officer and attended the ISO JTC1 SC15 WG 22 (POSIX) meeting in Ottawa. He will attend the next meeting in Brussels in October.

Co-operation with EARN is progressing.

Congratulations to Sunil Das on his recent promotion to the post of Senior Lecturer at the City University, London.

Dublin Workshop 5th.-7th. May

Norman Hull
Cute Hoor <norman@q2rs.uucp>

Q2RS
Court Place
Carlow
Ireland

Norman Hull is about to celebrate (in Vienna) 21 years in computing. During this time, for most of which he has been self-employed, he has worked on all major makes of mainframe (VERY alliterative), a few minis and many micros. His speciality is systems design, particularly in Office Automation related applications. It was this which brought him, belatedly, into the UNIX field a little under 4 years ago. Since then he has refused to work on anything less. Having joined the IUUG when working on his first Unix contract, he is currently secretary of the Irish group and a co-opted member of the European executive - which still leaves him a couple of days a week for his Software company Q2RS.

I am not really the best person to write about this as I was too involved in the local end of things, however I shall try to be reasonably objective.

First of all, as this was an EUUG event, and as such there were representatives from most European countries very much in keeping with the spirit of 1992. As is only to be expected in Ireland, we had a last-minute crisis. The Minister for Science and Technology, who was to welcome people and officially open the event had to stand in for a senior minister who had fallen ill, and all other ministers were occupied. However, in typical Irish fashion, the local member of the European Parliament re-arranged his schedule (with less than 24 hours notice) and performed the honours.

After the opening, and dinner, we had an introductory session. This was chaired by Michel Gien, who had put tremendous effort into arranging the subjects for discussion despite receiving very little input from the National Groups. This laid down the ground rules and prepared people for the main events on the Saturday. Having been at the Paris Workshop, I knew that the Saturday would be hard work and would quite likely not finish until quite late so, in common with a few others I had a very early night - about 3. am.

The first session on Saturday covered EUUG objectives and overall strategy, following which we broke into a number of working groups. These groups, some of which ran in parallel, covered Conferences, Public Relations, Publications and Software Distribution, Membership Structure, EUnet, and EUUG Administration.

Each working group produced a report of its deliberations, and these were all typed up and printed by Mairead O'Gorman who worked selflessly to get copies available in the shortest possible time, and was much nicer looking than most of the delegates. This meant that copies of each paper were available to each delegate when we resumed in plenary session to discuss the findings of each sub-group. Saturday's sessions extended until late evening, as expected, and were followed by an informal meeting of some of the delegates from smaller countries at which a number of issues were discussed. It was agreed that Friedrich Kofler from Austria would engage in various discussions on our behalf, with certain larger groups as we had a strong consensus on our European identity. This meeting broke up after 1. am.

The Sunday morning plenary session had the task of filtering the sub-group papers and putting forward voting points for the brief Governing Board meeting which followed.

The Governing Board meeting, which was over in record time, dealt with and agreed all of the voting points put to it by the body of the Workshop. This left us just a little late for lunch.

One unfortunate omission from the weekend was the Italian team, but I suppose that they can be forgiven as Joy Marino experienced the true meaning of his name when he became the father of Nicolo' on Thursday 4th. May. This, of course, left no time for him to book his ticket to Dublin ;-)

Summary of Discussions

In the summary below I have high-lighted the main points of discussion and the main conclusions that were reached. These have been grouped by the session/working-group where the items were discussed.

Remember this was a strategy meeting, we were in Dublin to decide on major goals and overall policy; the burden of implementation of what we decided is the job of the Executive Committee and the National groups.

EUUG OBJECTIVES

The first session was to decide upon the overall EUUG objectives. What is the EUUG about, what should the EUUG be doing ? All other discussions and decisions depended on this.

After much debate the following were agreed upon:

- UNIX is of prime interest
  UNIX is the operating system/environment which is of prime interest to the EUUG. Our definition of Unix should not be too precise, but should include such things as Unix being a culture, a platform for developing portable applications, and a vendor hardware independent system.
- EXCHANGES of technical information
  The EUUG should act as a co-ordinator in the exchange of technical information. In doing this it should enhance the services provided by the National groups. This technical information will mainly be concerned with the technology surrounding Unix rather than with its use.
- Exchanges of commercial information
  The EUUG should also act as a forum for the exchange of services that the National groups provide. This could be implemented through commercial exhibitions. The EUUG should, when presenting technical or commercial information, present only facts, not opinions; we didn't want to be seen to have a particular commercial bias.
- Increased european awareness
  The EUUG should stimulate European awareness both inside and outside of the EUUG. This should be done in a very positive way. Various opinions/views/concerns of the National groups should be expressed by the EUUG.

  There was a strong feeling that the national groups should work together, and be seen to be working together.
- EUUG as a co-ordinator
  The EUUG should act as means of co-ordination between National groups and National groups' activities. In this role of co-ordinator, when conflicts arise, these conflicts should be brought to the attention of the Governing Board, where votes on the actions resulting from the conflicts can be taken.

  It was recommended that the Governing board decisions once ratified be binding on National groups. This is to ensure that the European infrastructure which we have built up, is maintained and grows.

EUNET

This group discussed EUnet and the EUUG's relationship to it. We found that due to a combination of historical and PTT licensing reasons EUnet is a EUUG service for EUUG members, and for EUUG members only. However national groups may disguise EUUG membership costs to non-members who wish to use EUnet services; they must be informed that they have become members of the EUUG.

It was considered that archive facilities are highly desirable. These services must be reliable and consistent and it was agreed that financial support be provided.

As the usefulness of EUnet depends on being able to reach those that you want a decision was made to encourage more EUUG members to subscribe

to EUnet.

We felt strongly that EUnet was not an end in itself and so if it was found that someone else can provide a better and cheaper network, EUNET should be wound up.

To help public awareness of EUUG activities, an EUUG newsgroup is to be created. This would be used to advertise EUUG and National group activities.

EXECUTIVE DIRECTOR

There are many things that the EUUG could or should be doing. One of the problems is the mainly voluntary nature of the members of the Executive and Governing boards; this means that they cannot often devote the time that some issues really need and progress into new fields can take a back seat to dealing with their current EUUG work – and earning a living. Owles Hall is a secretariat and runs existing activities, it's job is not that of starting new ideas.

It was noted that both Usenix and the AFUU had benefited greatly by taking on paid staff as initiators. Both organisations agreed that, after some initial trepidation (eg about the financial risks), the decision had been well justified.

It was agreed that the EUUG should look into the possibility of hiring an "Executive Director" whose role would be to:

- Relieve the Executive committee from day-to-day management of the EUUG.
- Initiate and operate actions in the following areas: Co-Ordination (national groups with each other and with groups outside Europe); improving the external visibility of the EUUG and of the National groups; look at new areas in which EUUG might be involved; and in managing EUUG projects.

CONFERENCES

Neil Todd (the Conference Executive) had prepared substantial reading material for this session.

The first observation was that the Conference Executive noticed that there is a need to plan 2 to 3 years ahead which is considerably more than previously. Because of the financial stability, advance risky bookings can now be afforded.

The major observation was that the EUUG conferences should benefit members. They are organised under responsibility of the EUUG - with local support.

First point of discussion was the target audience of the conferences. It is forseen that, certainly in the future, there will be a split in the areas of interest which then will be covered in parallel sessions. For instance the AFUU recognises research papers, user papers and product papers to which we will probably add tutorials. The AFUU even has three different Program Committees to select papers.

A suggestion was made to host a specific session for Manufacturer Sales talks, perhaps associated with the exhibition.

The second major point of discussion was the conference language. It was eventually decided that the EUUG member survey should ask if the official conference language should be English, or that there be two official conference languages: English and the local language. Members views on simultaneous translation should also be sought.

A next point of discussion was tutorials. There is a strong tendency to hold tutorials before the conference. It was generally felt that the tutorials are "good value for money".

We were pleased that quality of the proceedings has gone up. They are repeatedly produced by the same team of people. Printing is done in the local country. Tutorial help to prospective authors may be investigated.

It was felt Calls for Papers for conferences did not receive a wide enough circulation, and that this be improved to maintain the quality of papers being received.

There was no firm conclusion on the point, but the feeling was that we could try one Conference per year with additional technical work shop(s) throughout the year. Warning was issued that one conference per year does not necessarily imply a doubling of the figures for attendances.

There was a suggestion to contact other User groups such as the Sun User group, Decus and the HP User group.

There is a general feeling that conferences should be cheaper but it is realised that it is difficult to achieve.

PUBLICATIONS and SOFTWARE DISTRIBUTION

It was felt that publications are needed but not exclusively on paper, some should be available in electronic form - email and software tapes.

No value was seen in the EUUG being involved with publications in areas that are already being covered sufficiently elsewhere. Although the EUUG wasn't in the business of acting as a book shop, there were a few instances where bulk purchase may be of benefit to members; however the market for items such as particular manuals had to assertained before getting a lot of them.

One perennial problem is how to find information; this is an area where a catalogues of catalogues would be useful. The EUUG should produce one.

Several National groups had begun to duplicate EUUG conference tapes and distribute them locally, it was decided that this should be allowed and encouraged. This would result a smaller number of tapes being sold and so a rise in price. Therefor the production costs should be funded centrally by the EUUG.

It should be noted, however, that the tapes remain with copyrighted by the EUUG and that there may be further software licensing restrictions.

Similarly tapes produced by National groups should be made available at cost price to other EUUG members. This is subject to copyright and the price may include production and research costs.

National groups should make EUUG aware of the existence of such tapes, and there should be a central service from EUUG to process the requests of items which are sourced from separate National groups.

The EUUG Newsletter should be published in English. Original language copies of individual articles are to be available through the EUUG (and from the National group); there should be a notice in the Newsletter about this when appropriate.

PUBLIC RELATIONS

It was felt that at present the relationship of one national group to another is not obvious in the public eye, if this could be improved all should benefit. Various means were discussed and it was decided that initially all UUG logos and other "visibility" material should be aligned to exhibit a "common corporate" identity.

Further more there should be a PR budget for press conferences and all National groups should assign someone to deal with public relations.

COORDINATION

It was felt that there was not enough coordination between the National groups. An example of an area of improvement is that presently National groups occasionally hold conferences at the same time; members might be interested in going to both of them – especially if they are geographically close and speak the same language.

To help in this the EUUG should organise a centralised register of events. This would be sent monthly to Governing Board. A five year plan should be drawn up.

National groups should have more than one contact point as a single contact is some times not available.

National group fax numbers should be on the back of the Newsletter.

STANDARDS

It was felt that the EUUG should have an active participation in standards organisations, the purpose is to present a European point of view, and to ensure that our special needs are not left out.

The organisations to be represented on are those that are: non political, further the aims of the EUUG, don't promote products.

The EUUG should seek passive observation of other standards organisations.

Portuguese UNIX systems Users Group Report

PUUG Executive
puug@inesc.pt

Portuguese UNIX systems Users Group
Av. 24 de Julho,
1200 LISBOA
PORTUGAL

How it Happened

The Portuguese UNIX systems Users Group was founded recently (last June).

The idea of creating a local group of UNIX fans in Portugal had been around 4 to 5 years but it had not been possible to gather the critical mass to get things working. Taking advantage that the EUUG 1988 Autumn Conference was held in Estoril (around 20 Km from Lisbon, as many of you still remember) we finally organised a start-up meeting. After this start-up meeting we began the preparation of the necessary bureaucracy and in the 2nd June we had our first General Assembly.

Who is doing What

The General Assembly has elected the following people to run the PUUG:

Executive Committee

Jose Legatheaux Martins	Chairman
Manuel Simoes	UNIX Convention
Paulo Amaral	Treasurer
Pedro Veiga	Network
Paulo Vilela	Secretary

Fiscal Council

Antonio Ferrari
Antonio Mendes dos Santos
Jose Armando Silva

The list of activities for the first mandate is to try to make the PUUG widely known and useful to the UNIX Community. As such two major topics will be dealt during the first year:

- Organisation of a Portuguese UNIX convention, to be held early next year.
- Promote the expansion of the Portuguese branch of EUnet. The network has already been running for 3 years, but with a limited number of nodes, although these are very active.

Membership

After the General Assembly of the 2nd of June we already have the following membership:

- Institutional members: 15
- Individual members: 14

We expect that the membership will increase during the Institution's first year, especially after the organisation of the first PUUG convention.

News from the Netherlands

Frances Brazier
frances@psy.vu.nl

Department of Cognitive Psychology
Vrije Universiteit
Amsterdam
The Netherlands

Frances has a master's degree in Mathematics and Computer Science, and has been doing research at the Department of Cognitive Psychology for the past 7 years. Human-machine interfaces and information retrieval are her major fields of interest.

Conferences

As was mentioned in the last Newsletter the NLUUG's last conference, held on May 9th, was on human-machine interfaces. A short description of each of the talks should provide an impression of the programme's contents. As the quality of the slides was above expectation conference notes will be published of copies of the slides presented.

A. Jameson and W. Claassen (Nijmegen Institute for Cognitive Research and Information Technology, KU Nijmegen), discussed the promises and prospects of natural language communication with computers, using UNIX consultants as an example of the nonlinguistic issues involved in the design of such systems and the resolution of ambiguities as an example of linguistic issues. Three UNIX consultants which use a form of natural language communication, were compared on the basis of the knowledge on which inferences made during interaction, are based. The major problem identified concerned the fact that such systems have much less and simpler knowledge than do human experts. The promising aspect concerned the fact that such systems use the same sort of knowledge that humans use in handling the same types of situation.

René Collard, (Océ Nederland BV, Research and Development), described the process of developing a graphical user interface for a publishing and printing system. The four phases of product development he distinguished: analysis, design, realisation and testing, were described. The phase of design, the phase in which the user interface was developed, was described in slightly more detail. The principles behind the design of the interface were those of simplicity, consistency and flexibility. The three layered approach, in which concept, dialogue and presentation are considered separately, was illustrated for menu design. A number of design decisions were highlighted, the resulting screens were shown.

Scott Ritchie's (SUN Microsystems Inc, USA) session on the OPEN LOOK graphical user interface, provided an overview of the goals, implementation, and implications of X/Open. The basic design goals (1) balance of simplicity, consistency and efficiency, (2) good visual design, (3) interoperability and (4) device independence,

were described, illustrated and clarified when necessary. The legal status, availability and application were also addressed.

Kieron Drake, (Department of Computer Science, Queen Mary College, London) held a revised version of the paper presented at the EUUG conference in Lissabon: *NeWS and X, Beauty and the Beast?*, in which the strengths and weaknesses of the two systems are compared.

S. Doaitse Swierstra, (Department of Computer Science, Rijks Universiteit Utrecht) presented the design of a system in which a programming environment based on the incremental evaluation of attribute grammars is combined with a graphical interface. The use of higher order attribute grammars, the interpretation of user interactions, the interface with the graphical subsystem and incremental evaluation were topics included in this presentation.

Charles van der Mast, (Information Systems, Technical University of Delft) discussed an object oriented approach to user-interface design of information systems. The types of expertise required for the design of information systems were identified and assigned a role within the design process. The complexity of the design process of object oriented systems was stressed. The rôles of the three components distinguished: static component, dynamic component and the visual component, were discussed. The necessity to consider help and error messages was mentioned.

A layered model of the components involved in the user interface formed the basis for Bouwe van der Eems' (Apollo Computers bv), presentation on a standard user interface management system. The role of the X-Window System in the model, namely for the data stream encoding layer, base window system interface and for the toolkit intrinsic layer, was described in detail. The toolkit layer and the presentation layer were delegated to OSF/Motif, the Dialog Layer to Open Dialogue. The functions of both systems in this model were described to a fair level of detail.

Our next conference

On November 10th the NLUUG will be holding its next conference, with an exhibition, on *UNIX & Connectivity*. Anyone interested in presenting a paper is invited to contact the programme chair (Emile van Dantzig, emile@ace.nl), before September 8th. For further information on the conference itself please contact the NLUUG buro (address on the cover of this Newsletter).

Call for Papers

UNIX & Connectivity

Autumn Meeting of the NLUUG:

9 November 1989

EDE (De Reehorst)

The Netherlands

Papers

The program committee for the biennial NLUUG meeting invites you to submit a paper for the upcoming meeting, which will have as key subject: ''UNIX and Connectivity''.

The aim of this meeting is twofold:

- informing participants of the latest developments in the areas of networks and network applications,
- offering instruction, through the tutorials, in the areas of network use and UNIX-related matters.

The papers to be presented will be technically and/or research oriented. The program committee suggest the following subjects:

A. Media & protocols (UUCP, TCP/IP, DECNET, SNA, FDDI, Token Ring, Ethernet, Sockets, XTI, USENET/NSFnet/Internet/X.25),

B. ISO/OSI/Standards (ODA/ODIF, X400/X500, ISODE),

C. Management (security, configuration, maintenance, performance),

D. Distributed environments (file transfer, electronic mail, remote login, NFS, RFS, X-11, distributed operating systems).

Tutorial sessions

The program committee suggest the following tutorial subjects:

A. Network configuration and performance,

B. NFS configuration,

C. Security and management,

D. UNIX for new users,

E. UUCP configuration,

F. Connectivity with UNIX (PC, Mac, OS/2 etc),

G. Standardisation.

Correspondence

Please send abstracts (maximum 1200 words) BEFORE 8 SEPTEMBER 1989, to one of the members of the program committee:

Emile van Dantzig (chair) <emile@ace.nl>, or
Henk Hesselink <henk@ace.nl>
ACE Associated Computer Experts bv
Van Eeghenstraat 100
1071 GL Amsterdam
+31 20 6646416

Marten van Gelderen <marten@xirion>
Xirion bv
World Trade Center
Strawinskylaan 1135
1077 XX Amsterdam
+31 20 6649411

Willem de Vries <wdv@sunnl>
SUN Microsystems Nederland bv
Postbus 1270
3800 BG Amersfoort
+31 33 501234

Jos Alsters <josal@wn2.sci.kun.nl>
Katholieke Universiteit Nijmegen
Afdeling CCZ
Toernooiveld 1
6525 ED Nijmegen
+31 80 613174

Organisation

Times

The meeting will start at 9.30 am. and finish at 17.00 pm., on Thursday 9 November 1989, in EDE in the "De Reehorst" conference centre.

Sessions

There will be two technical sessions of six presentations in parallel with four tutorials.

Duration

The presentations will last 45 minutes each, the tutorials will last 1 hour and 15 minutes each.

Proceedings

Proceedings will be made available.

Exhibition

An exhibition hall is available for hardware and software companies. The exhibition will be open from 9.00 am.

Questions

General organisatorial questions should be directed to:

Patricia Otter <patricia@xirion>
Xirion bv
World Trade Center
Strawinskylaan 1135
1077 XX Amsterdam
+31 20 6649411

Organisatorial questions regarding the exhibition should be directed to:

Hans Linschooten <hans@hpuamsa>
HP Nederland bv
Startbaan 16
1187 XR Amsterdam
+31 20 5476911

UKUUG Report

Mick Farmer
mick@cs.bbk.ac.uk

Birkbeck College
University of London
England

Mick is a lecturer at Birkbeck College (University of London) and the Secretary of the UKUUG. His interest is in all aspects of Distance Learning and he is the Senior Consultant (Software) for LIVE-NET, an interactive video network connecting London's colleges. He is also a member of the University's VLSI Consortium, mainly because the design tools draw such pretty pictures.

UKUUG Summer '89 Meeting

We held a successful Technical Meeting at the University of Strathclyde (Scotland) on 27-28th June. Twelve varied papers (synopsis in the last issue) were enthusiastically received by over 80 participants who had braved a strike on British Rail to be there.[1] Jim Crammond's tutorial on Sendmail was extremely popular. 46 people turned up and copies of his notes ran out.

Your Average Conference Attendee

At Strathclyde Technical Meeting the participants were asked to complete a questionnaire based on that given out at EUUG conferences. Just over 60% did so. We've analysed the returns using SPSS and, with this information, I've been able to reconstruct *Strathclyde Person* who, for reasons that will become obvious, I've nick-named Lindsay.

Lindsay is 31 years of age and lives in the United Kingdom, probably England.[2] Lindsay works primarily in an academic/research environment at the senior/professional level and has worked with computers for ten years, five of those involving UNIX. Naturally, Lindsay is a member of the UKUUG and possibly a member of the Sun UK User Group. Lindsay probably subscribes to and reads the EUUG Newsletter (through the UKUUG subscription) and also reads UNIX Review, UNIX World, and IX Magazine.

Lindsay travelled by scheduled flight to get to the meeting and, like most people, stayed in the Student Accommodation provided by the University of Strathclyde. The cost of attending this conference was paid by Lindsay's employer. As for previous meetings/conferences, Lindsay probably attended the UKUUG Winter '87 Meeting in London, the UKUUG Winter '88 Meeting in Canterbury, and possibly the EUUG Spring '88 Conference in London.[3] Lindsay heard about this meeting in the EUUG Newsletter and through the UKUUG mail shot, and probably saw the announcement on UKnet. Lindsay thinks that accommodation, coffee, lunches, and the conference dinner should be included in the conference fee but is less interested in the other social events or tapes. Lindsay feels that there should be a discount for UKUUG members but not for block booking or EUUG membership!

Lindsay felt that the technical sessions and the proceedings were of good quality and excellent importance.[4] Overall, Lindsay thought that the food was average, with the conference dinner

1. Copies of the proceedings may be purchased from the UKUUG Secretariat at £10 including post and packing.
2. I'm not offering many surprises!
3. Obviously not one for foreign travel.
4. What's that mean? - Ed.

good. In addition, Lindsay felt that there should be more product demonstrations, exhibitions, and book stalls with no commercial sessions, sales talks, or spouse programmes. For future meetings/conferences Lindsay would like to see more research speakers and UNIX super stars, but is not impressed by industry big shots or commercial speakers. Overall, Lindsay felt that the meeting was good value for money.

Finally, Lindsay thought that networking tutorials or those that are end-user oriented would be useful. Paying by Barclaycard/VISA would also be useful.

UKUUG Winter '89 Meeting

This meeting will be held at the University of Wales College of Cardiff on 11-13th December, 1989. Details are yet to be finalised but the main theme of the meeting will be networking. In a spirit of collaboration we expect the meeting to be sponsored jointly by the UKUUG, UKnet, JNT (Joint Network Team), and IUNC (Inter-University Networking Committee). The three days will include up to four sessions of talks, and we hope to run a couple of tutorials.

One of the sessions will be an introduction to UKnet and will be especially useful to new or potential UKnet members (both Commercial and Academic) as well as being of more general interest. Another session will be devoted to topics from the IUNC and JNT. We expect there to be a small exhibition.

Suggestions for tutorials and speakers can be made to the UKUUG (ukuug@ukc.ac.uk) or to the local organiser:

Robert Evans
Dept of Computing Mathematics
U.W.C. Cardiff
PO Box 916
Cardiff CF2 4YN
United Kingdom
Phone: +44 222 874000 x 5518
Fax: +44 222 371921
Email: robert@cm.cf.ac.uk

UKUUG Summer '90 Meeting

We plan to hold this meeting in London, England, on 11-13th July, 1990. Further details will follow when they are available.

UKUUG Winter '90 Meeting

We plan to hold this meeting in Cambridge, England. Further details will follow when they are available.

London UNIX User Group (LUUG)

Three talks have been scheduled for the last quarter of the year. These are

- September 28—Keith Brazington is talking about Amateur Packet Radio.
- October 26—Mick Farmer is talking about LIVE-NET, London University's interactive video network. This meeting will take place over LIVE-NET. November 30—Lori Grob is talking about Parallel Computing and UNIX.
- December 28—No meeting.

The LUUG lectures are organised by Andrew Findlay (Andrew.Findlay@brunel.ac.uk).

Glasgow Local UNIX Group (GLUG)

This group is currently resting over the summer. Suggestions for speakers and venues to Jim Reid, the local organiser (jim@cs.strath.ac.uk).

UNIX Security Workshop

A three hour VHS video of the proceedings is available for £50.00, including post & packing (excluding VAT in the UK) from the address below. You will be sent an invoice.

Birkbeck College Video Services
Birkbeck College
Malet Street
London WC1E 7HX
ENGLAND
Phone: (+44) 1 631 6351

UKUUG System Administration Meeting

Feb '90

The UKUUG intends to hold a workshop on UNIX Systems Admin during February 1990 in London.

Current topics of interest are:

- Smart shell and menu driven systems
- Administration in a Distributed Environment
- System Audit Procedures
- Software Integration and Test Procedures
- Data Protection Compliance
- Yellow Pages—friend or foe ?

Further suggestions for the programme are welcomed.

If you wish to offer a talk, please contact the Programme Chair as soon as possible—you will not be committed (at this stage).

Prog Chair

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AMIX report—Israel UNIX Users Group

Ariel J. Frank
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Deputy Chairperson
Dept. of Mathematics and Computer Science
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Ramat Gan, Israel

Dr Ariel Frank received his PhD in Computer Science from State University of New York at Stony Brook. He discovered computers during his studies at Bar-Ilan University and the Weizmann institute of Science in Israel.

Dr Frank is Deputy Chairperson of the Mathematics & Computer Science of Bar-Ilan University. His research interests are in Distributed Operating Systems and AI Environments. He has a keen interest in UNIX and serves for the last 3 years as the elected AMIX (Israeli UNIX user group) Chairperson.

Even though 1989 is not yet over, there has been no lack of activity by AMIX members in Israel. On 25-26 of January we had a series of tutorials and workshops on UNIX user interfaces. The most recent AMIX event was the 4th annual AMIX conference that took place on 14-15 of May in Ramat-Gan, Israel.

The UNIX interfaces tutorials were given by AMIX board members Dr Maurice Bach (author of the *The Design of the UNIX Operating System*) and UNIX guru Dr Joel Issacson. The tutorials covered UNIX system calls and library calls, terminal interfaces, and an introduction to the X system. The following day a workshop on Graphical User Interfaces (GUI) reviewed all the important UNIX GUIs (including DEC XUI, HP New Wave, Apollo Open Dialogue, and Sun/AT&T Open Look). The opening talk by Dr Issacson was titled *The window is open—beware not to fall*. About 70 participants attended both events.

The intensive first day of the 4th UNIX conference was comprised of two half-day tutorials. The first one, given by AMIX chairperson Dr Ariel Frank, was on the *Structure of Operating Systems and UNIX*. The second tutorial was given by UNIX hacker Eli Marmur on *Advanced Concurrent C Programming in a Commercial UNIX Environment*. About 50 participants attended both tutorials.

The second conference day turned out to be extremely interesting. The opening remarks were provided by Dr Micha Chanani, IPA (Israel Data Processing Association) chairperson. He wished for continued UNIX success but as a way of warning, he traced the fate of the successful Algol-60 language that turned into the failed Algol-68 system because of over ambition.

The opening talk, on the computing policy of the Israeli Government, was given by Naor Tal of the Finance Ministry. His main message was that UNIX is great and he is just waiting to be offered working and reliable UNIX products. It seems that the Israeli market is ready for UNIX if only all the concerned, especially system and software companies, organise and get more serious about the UNIX business.

Ron Lachman, president of the USA Lachman Associates (now part of Interactive), delivered an

excellent keynote talk. He traced and remarked on all the recent major events of the open systems and UNIX world. His theme was that *Yes, UNIX exists!* and he 'proved' it in many ways and cuts.

The afternoon was dedicated to a UNIX users session and a panel. The UNIX users session consisted of short presentations given by representatives of four high-tech Israeli companies who use UNIX heavily (Ready Systems, Optrotech, RobCad and Tovna). They described their successful use of various UNIX systems and tools for design and development of their advanced products. The concluding panel theme was *UNIX directions and developments in the 90s*. The participating experts elaborated on the UNIX success story in various parts of the world, the lessons to be learned, and on how to advance the state of UNIX in Israel, especially in the commercial market. The conference was attended by over 100 people.

In mid June we had a two-day commercial UNIX Show and Workshop organised by People & Computers (a computer weekely) with support of AMIX. The show was very successful with 20 major exhibitors. A rather nice crowd (for Israel) of about 300 people attended the show. The workshops included opening talks by Dr Ariel Frank of AMIX on *Trends in the UNIX Market* and by Richard Kolodynski of Europe SCO on *Developments in the UNIX/XENIX World*. A dozen additional talks where given by representatives of the companies exhibiting in the show.

USENIX Association News for EUUG Members

Donnalyn Frey
donnalyn@frey.com

Frey Communications

Ms Frey is the USENIX Association Press Liaison. She provides members of the press, USENIX Association members, and EUUG members with information on the activities of the USENIX Association.

1990 Winter USENIX Association Conference

The 1990 Winter USENIX Conference will be held in sunny Washington, DC on January 20 – 26, 1990. The first two days will be devoted to tutorials, with the next three days for technical sessions. Topics which may be presented include UNIX and Artificial intelligence, Ada and UNIX, Software Release Systems and Servers, Architectures and Compilers, File Systems and Servers, Distributed Systems and Servers, Distributed Systems and Services, User Interfaces, and Novel Applications. For further information on the conference, contact the USENIX conference office.

The 1990 Summer USENIX Association Conference

The 1990 Summer conference will be held on June 11-15, 1990 at the Marriott Hotel in Anaheim, California, home of Disneyland. The call for papers will be announced in November 1989.

Distributed Processing Workshop and Graphics Workshop

The USENIX Association will be holding a Distributed Processing Workshop in Fort Lauderdale, Florida October 5 – 6, 1989. The fifth Graphics Workshop will be held November 16 – 17, 1989 at the Doubletree Hotel in Monterey, California.

Further Information on Conferences and Workshops

If you need further information on registering for upcoming USENIX Association conferences or workshops, contact the USENIX conference office at Conference Office at 22672 Lambert Street, Suite 613, El Toro, CA 92630, USA. Email to {uunet,ucbvax}!usenix!judy or judy@usenix.org. The conference office can provide you with information on the annual Computer Graphics, Large Installation Systems Administration, UNIX Security, and UNIX and Supercomputers workshops. The office can also provide information on the 1990 C++ conference and the semi-annual technical conferences. A schedule of upcoming events is included in the calendar in this issue.

Preliminary Call for Participation

USENIX C++ '90

Tentatively in late-April 1990 in California

C++ continues to show explosive growth as the object oriented implementation language of choice for production level work. The nearly-annual C++ conference is a haven for those who use the language, those who develop the language, and those who are interested in the language. The conference enables them to take a look at where C++ has been, where is it now, and where future developments should take it.

The conference will consist of a day of tutorials and classes and two days of technical sessions. Papers are invited on all aspects of C++, from the development of compilers and preprocessors to case studies of projects which have used the language. Proposals for tutorials or classes on systems which make use of C++ or on the uses of C++ are also invited.

Paper abstracts and tutorial proposals are due **January 12, 1990**. Abstracts should be no more than two pages, and should describe the work in sufficient detail to allow the referees to judge the merit of the work. Tutorial proposals should be no more than four pages in length, and should describe the content, purpose, and intended audience. Abstracts and tutorial proposals should be submitted either electronically (preferred) or in hard copy; electronic submissions should be either plain text, *n/troff*, or PostScript. Notification of acceptance will be made by **February 2, 1990**; final papers in camera ready form must be received by **March 9, 1990**. Accepted papers which meet this deadline will be published in a conference proceedings.

Abstracts and proposals should be sent to:

Jim Waldo
Apollo Computer
330 Billerica Road
Chelmsform, MA 01826

waldo@apollo.com
decvax!apollo!waldo

Calendar of UNIX Events

This is a combined calendar of planned conferences, workshops, or standards meetings related to the UNIX operating system. Most of this information came from the various conference organizers, although some was taken from ;login: (USENIX), 13, 1, Jan/Feb 1988, CommUNIXations (/usr/group), VII, 6, Nov/Dec 1987, and the /usr/group UNIX Resources Guide.

If you have a UNIX related event that you wish to publicise then contact either John Quarterman at *jsq@longway.tic.com* or Alain Williams at *addw@phcomp.co.uk* giving brief details as you see below.

Abbreviations:

C	Conference
G, MD	Gaithersburg, Maryland
S	Symposium
T	Tradeshow
U	UNIX
W	Workshop
UG	User Group

year mon days	conference	(sponsor,) (hotel,) location
1989 Sep 5-6	Usenix W Distributed Systems	Ft.Lauderdale, FL
1989 Sep 7-8	Sun UK UG	C Manchester, UK
1989 Sep 7-9	USENIX Sys Admin	W Austin, TX, USA
1989 Sep 18-22	EUUG	WU Vien, Vienna, Austria
1989 Sep 19-22	ACM SIGCOMM	Austin, TX
1989 Sep 26-28	GUUG	CT Wiesbaden, Germany
1989 Oct 16-20	IEEE 1003	Brussels, Belgium
1989 Oct	UNIX Expo	New York, NY
1989 Oct 5-6	USENIX -Distrib Proc	Ft. Lauderdale, FL, USA
1989 Oct 31-Nov	2 IETF	IAB, U. Hawaii, Honolulu, HI
1989 Nov 1-3	UNIX EXPO	Javits Conv. C, New York, NY
1989 Nov 6-10	DECUS S	Anaheim, California
1989 Nov 9	NLUUG C	The Netherlands
1989 Nov 9-10	14th JUS UNIX Symposium	Osaka, Japan
1989 Nov 16-17	USENIX Graphics	Monterey, CA, USA
1989 Nov 24	AFUU C	Paris, France
1989 Dec 5-6	JUS UNIX Fair 89	Tokyo, Japan
1989 Dec 8-9	Sinix C	Singapore
1989 Dec 11-13	UKUUG C	Cardiff, Wales, UK
1990 Jan	U in Gov. C&T	Ottawa, ON
1990 Jan 22-26	USENIX	Washington, DC
1990 Jan 23-26	UniForum	Washington Hilton, Washington, DC
1990 Jan 29	IEEE 1003	New Orleans, LA
1990 Feb 6-8	IETF	IAB, (FSU, Talahassee, FL)
1990 Mar 27-30	AFUU	Paris, France
1990 Apr	USENIX C++ Conference	California – tentative
1990 Apr	IEEE 1003	Montreal, Quebec

1990 Apr 23-27	EUUG	Munich, Germany
1990 May 2-4	IETF	IAB, (U. Washington, Seattle, WA)
1990 May 7-11	DECUS S	New Orleans, Louisiana
1990 May	U 8x/etc C&T	/usr/group/cdn, Toronto, ON
1990 Jun 11-15	USENIX	Marriott, Anaheim, CA
1990 Jul 11-13	UKUUG C London	
1990 Jul 31-Aug	2 IETF	IAB, ?, not in North America
1990 Sept 11-14	AUUG Conference	Southern Cross, Melbourne, Australia
1990 Oct 22-26	EUUG	Nice, France
1991 Jan 21-25	USENIX	Dallas, TX
1991 Jan 22-25	UniForum	Infomart, Dallas, TX
1991 Feb	U in Gov. C&T	Ottawa, ON
1991 May	U 8x/etc C&T	Toronto, ON
1991 May 20-24	EUUG	Tromso, Norway
1991 Jun 10-14	USENIX	Opryland, Nashville, TN
1991 Sept 16-20	EUUG	Budapest, Hungary
1992 Jan 20-24	USENIX	Hilton Square, San Francisco, CA
1992 Jan 21-24	UniForum	Moscone Center, San Francisco, CA
1992 Spring	EUUG	Jersey, UK
1992 Jun 8-12	USENIX	Marriott, San Antonio, TX
1993 Jan	USENIX	Town & Country, San Diego, CA
1993 Mar 2-4	UniForum	Washington, D.C.
1993 Jun 21-25	USENIX	Cincinnati, OH

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EUUG National group addresses can be found on the back cover of this newsletter.

USENIX Online Index and Library

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Deborah Scherrer is currently the USENIX Vice President and has been serving on its Board of Directors for many years. She is also a Computer Scientist for mt Xinu, Inc., where she works on their Mach-distribution project. She also serves on the mt Xinu Board of Directors, is a member of the *UNIX Review* Editorial Board and the *Computing Systems* Editorial Panel, has been a Contributing Editor for *UNIX/World*, was founder of the Software Tools Users Group, and always loves to come to EUUG meetings.

As the quantity of USENIX, EUUG, and related publications rapidly expands, and the quality becomes increasingly attractive, the need arises for some sort of online access, at least to an index, or list, of published articles. USENIX has recently funded and implemented an electronically accessible index to USENIX, EUUG, and related groups published articles. Versions of abstracts and/or full papers will be made available in cases where authors are willing to donate them.

Currently we have indexed all available issues of the following:

USENIX:
- Conference proceedings
- Workshop proceedings
- Computing Systems Journal
- Newsletters (;login:)

European UNIX User Group:
- Conference proceedings
- Newsletters

Software Tools User Group:
- Conference proceedings

Australian UNIX User Group:
- Newsletters

The *UNIX Review* periodical is currently being indexed and will soon be available. Other sources (JUS, AFUU, GUUG, NZUSUGI, etc.) are being collected and evaluated and will be included as deemed suitable.

The index is kept as a simple ASCII file, in refer/bib format, sorted by author. It contains information about title, authors, publications, page numbers, dates, and the usual bibliographic information. In some cases, electronically readable versions of full papers or abstracts are also available. If a paper is available online, this is indicated in its index entry. USENIX is currently soliciting authors of publications to donate their full paper, or abstract only, for inclusion and distribution through the online library. (When the paper retrieval capability is fully functional, we will announce the procedures.)

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```

Although the library and index will be most effectively used electronically, the index will also be printed periodically and made available through the USENIX office, for those without email access.

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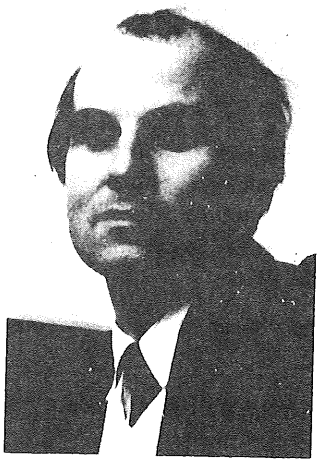
ISO JTC1 SC22 WG 15 (POSIX) Meeting, Ottawa

Dominic Dunlop

The Standard Answer Ltd.



Equipped with an undergraduate degree in Electrical Engineering from the University of Bradford in England, Dominic sidled into the world of mini- and micro-computers. From there, he managed to effect an entry into the hallowed temples of UNIX, and has hung around there ever since, writing the odd paper, contributing to the odd standard, and starting the odd company. He became an independent consultant in January, 1989, and hopes to have the money to buy his latest company, The Standard Answer Ltd., its own UNIX computer Real Soon Now.

ISO JTC1 SC22 WG 15 (POSIX) Meeting, Ottawa
1st-3rd May, 1989
'Snitch Report' to EUUG and USENIX

Red Flag Items

1. The Comité Européen pour la Normalisation (CEN—European Committee for Standardisation) is in the process of voting on a proposal from West Germany that the whole of the *X/Open Portability Guide, Third Edition, 1988* (XPG3) should become a 'draft European Prestandard'—one step away from being a European standard. (Conformance to European standards is almost mandatory for purchases made by European Community government organisations, and is strongly recommended in European Free Trade Association member governments.) This idea seems half-baked, not least because XPG3 covers a lot of ground, overlapping and conflicting with several existing European standards or prestandards. Since X/Open is committed to alignment with international standards as they appear, to have CEN, an international body, aligning with X/Open would introduce an unmanageable circularity. Consequently, the ISO POSIX working group has, in effect asked CEN to drop consideration of XPG3 in favour of the draft POSIX standard.
2. The International Organisation for Standardisation (ISO) POSIX working group has recommended that ISO should adopt draft IEEE standard 1003.2, *Shell and Application Utility Interface for Computer Operating System Environments* as a 'draft proposal' in September. Effectively, this means that the shell and tools have started on their journey to becoming an international standard.
3. The working group has decided *not* to recommend that ISO make an early start towards standardisation of 'an object-orientated language based on C'. No agreement could be reached on whether such a language should be
   - — C++ or something else (such as Objective C); and
   - — Constrained to be a true superset of ANSI C or not so constrained.

4. While, for reasons of verifiability, the working group wants to work towards the specification of POSIX in a Formal Definition Language, rather than in a less formal language, or in any particular computer language, it recognises that this can only be a long-term goal. Consequently, a message of comfort has been sent to the IEEE's 1003.1 group, encouraging it to continue in its work on a language-independent—but not strictly formal—definition. This should allow the IEEE to produce the first edition of the 1003.4 Real-Time standard in a language-independent form.

5. ISO appears to be setting up a new sub-committee concerned with all aspects of computer security (including both operating systems and communications). The POSIX group is working to ensure that the work of the new group does not conflict with the security requirements of POSIX, as developed by IEEE 1003.6.

6. Following the formation of two new IEEE working groups—1003.10, *Supercomputing Application Environment Profile*, and 1003.11 *Transaction Processing Application Environment Profile*, the ISO working group has been asked to consider its attitude to such profiles—definitions of application-specific variants or enhancements of an underlying POSIX-compliant operating system.

Introduction

This is the first of a series of reports which I shall be making on the activities of (pause for deep breath) Working Group 15 of Sub-Committee 22 of Joint Technical Committee 1 of the International Organisation Standardisation and the International Electrotechnical Commission (ISO/IEC JTC1/SC22/WG15). It is this group which is taking the work of the Institute of Electrical and Electronic Engineers (IEEE) on POSIX, a portable operating system interface, from its current official status as an American national standard to its final goal as an international standard. I have been sponsored by the European UNIX systems User Group (EUUG) and USENIX to attend the meetings of the working group on your behalf, representing your views and reporting back on developments which affect your interests. In these reports, I shall be asking for feed-back from you. As I write, there is no formal mechanism in place to handle this feed-back, so send mail to me directly for the moment. My address is *domo@sphinx.co.uk*.

Meeting Report

Hosted in Ottawa by the Standards Council of Canada, May's three-day meeting of ISO/IEC JTC1/SC22/WG15 was attended by five 'technical experts' (representatives) from the USA, three from the UK, two from Denmark, and one each from Canada, France, Japan and the Netherlands. There were three 'invited experts': myself, invited by the UK delegation to represent the EUUG and USENIX; Shane McCarron, invited by the USA on behalf of UNIX International; and Mike Lambert of X/Open Company Ltd.

Mike was invited by Jim Isaak, convener of the working group, to set out X/Open's mission and its position in relation to ISO's activities. It was clear that this was necessary as, in the responses to a previous ballot on the working group's work-in-progress, several respondents effectively asked "Why are we doing this? Doesn't it duplicate the work of X/Open?" What is more, CEN is voting on the adoption of XPG3 in its entirety as a 'draft European Prestandard'—see *Red Flag Items* above. (In fact, there is officially no such beast as a draft European Prestandard; there are 'Draft Standards' and 'Prestandards'. It seems that Prestandard is the intended meaning.)

X/Open's position is clear: "X/Open is not", as the preface to each XPG volume states, "a standards-setting organisation." Instead, X/Open is committed to align itself with international standards as soon as these are agreed, suggesting that its members adhere to other, less formal, national or de-facto standards only when no international standard is in place. In order that national and international standards can be arrived at in a timely manner, X/Open fully endorses the activities of organisations such as the IEEE, ANSI and ISO, and provides resources to aid in their activities, as it has done—and continues to do—in the case of the IEEE's 1003 (POSIX) developments. Consequently, the Working Group considers that it is inappropriate for an international standards body such as CEN to align itself with the XPG; the XPG is not itself intended to be a formal standard, but rather a series of moving pointers to other standards. As such, it

performs a valuable service to industry by indicating areas where more formal standardisation work should take place in the future. Each XPG pointer keeps moving until the area it addresses has become the subject of an agreed international standards. It is unlikely that CEN would tolerate such moving pointers, and would effectively freeze the XPG in its current state.

Another problem is that XPG3 specifies C, COBOL and FORTRAN—languages covered by other European Standardisation efforts. It also calls out communications protocols, media formats and a graphics interface (X) which may or may not overlap or conflict with other standards. It is not clear that these matters were considered before CEN moved to a vote.

Happily, well-defined mechanisms exist for communication between ISO and CEN, and "maximum alignment with ... ISO ... DP9945" is a requirement of the European Community's 'order form' to CEN requesting that a POSIX-based European Standard be produced. The working group is using the channels to suggest that DP9945, and, in the near future, the draft IEEE 1003.2 standard, replace XPG3 in their deliberations.

The issue of C++ standardisation was raised in the working group, as there was a (rather vague) feeling that object-oriented facilities were essential for future developments in operating systems, user interfaces, communications systems... well, most things, really. WG15's parent, subcommittee 22, has responsibility for language standardisation. A resolution was drafted recommending that work be started on standardisation of an object-orientated programming language based on C. (The bulk of any such work would probably be farmed out to ANSI, just like the work on C itself.) However, several valid objections resulted in the resolution being dropped:

— It is not clear whether the best basis for such a standard would be AT&T's C++, Stepstone's Objective C, or something else. (The issue is known to excite religious fervour.)

— It is not clear whether or not the language (whatever it is) should be constrained to be a superset of C. Such a constraint would be desirable from the point of view of compatibility, but might compromise the ideological soundness of the language. (Religion again.)

— The business of WG15 is the definition of an operating system interface. It should not concern itself with the means of implementation of an operating system which presents that interface—even if almost everything that conforms to the definition happens to be written in on particular language—C.

All this may seem to be somewhat arcane—distanced from reality. What it boils down to is that WG15 does not think that the time is yet ripe for international standardisation of an object-oriented C derivative. More work needs to be done by industry groupings and national standards bodies—and more users need to vote with their feet—before the terms of reference for an international standard become clear.

The working group discussed the path towards a language-independent definition of POSIX, an issue which took on added urgency because the working group's decision was required in order that the IEEE could determine the initial format of its 1003.4 standard (real-time extensions to 1003.1), which moves to ballot in January, 1990. Like IEEE 1003, WG15 intends that the standards it produces should *ultimately* be expressed in a form which is independent of any particular computer language. And also like 1003, WG15 is currently drafting standards in terms of the C language. Two questions arise: how independent, and how ultimate?

IEEE 1003.1 is working towards removing C-language dependencies from Std. 1003.1-1988, but is stopping some way short of using a Formal Definition Language (FDL). While this precludes the automatic generation of test procedures which would be possible, were a verifiable FDL is used, it is do-able in the short term. Soon enough, in fact, to allow 1003.4 to go to ballot in a language independent form. If 1003.1 were to drop this work in favour of a FDL, results would be postponed for some years, and 1003.4 would have to be defined in terms of the C language, much to the distress of the Ada community.

WG15 decided that use of a FDL was most appropriate to an international standard. Consequently, the group had to decide whether it wanted

a. to ignore 1003.1's work (which could result in 1003.1 dropping the activity);

b. to recommend that 1003.1 adopt a FDL (with a resultant gross delay); or

c. to use 1003.1's work as a basis for subsequent WG15 progress towards a formal description of POSIX interfaces.

The last option was chosen, resulting in a resolution which exhorts 1003.1 to keep up the good work. Expect 1003.4 to be language-independent.

For its part, WG15 is going to look into FDLs—a particularly esoteric subject—in more detail at its next meeting in Brussels in October. Ultimately, its standards will have three levels:

— Formal description (verifiable, but almost incomprehensible to mere mortals);

— Informal, but computer language-independent, commentary; and

— Series of language bindings, which may or may not implement the whole interface. (For example, a COBOL binding might well exclude the *fork* interface.)

This should keep us busy well into the 1990s.

ISO, in order that it can exercise adequate control of activities dispersed both geographically and in time, tries to compartmentalise as much as possible, making sure that the responsibilities of each sub-committee and working group are very well defined. The trouble is that there are certain topics which just cannot be pushed into a single compartment; internationalisation is certainly one, affecting as it does almost every aspect of information technology; security—an issue which currently has many people extremely worried—is probably another. Despite this, ISO JTC1, having decided that the issue needs an identifiable home, is thought to be about to convene a new working group—probably WG27—to handle all aspects of security. (There is much vagueness here: JTC1's mailing mechanism appeared to have failed, with the result that nobody was sure exactly what would be voted on at its meeting in Paris in late July.)

Of course, this has WG15 worried, both in its own right, and on behalf of other groups and sub-committees affected by issues of security. (Most notable among these is SC21, which manages the burgeoning ISO protocol stack.) Consequently, a resolution has been forwarded to JTC1 via SC22 saying, in effect "We're in this together. Let's work together." The means of working together is a rapporteur group, a mechanism which exists to allow one group to monitor the activities of another. WG15 has such groups covering verification and internationalisation as well as security.

Jim Isaak, convener of WG15, is much concerned with the issue of *functional standards for applications portability*, or *Application Environment Profiles* (AEPs). Jim chairs IEEE 1003.0, which, in effect, is stocking the shelves of a standards supermarket from which users can pick the selection (or profile) needed to allow applications of a particular type to be realised in a portable manner. (X/Open, The Open Software Foundation and more than a few governments are doing much the same sort of thing.) One example of such a profile might satisfy the needs of applications requiring distributed database services with reliable transaction processing and high security. (Continuing the supermarket analogy, these would be shopping lists, each allowing the execution of a number of recipes—applications... Never mind.)

Already, the IEEE has working groups which are defining AEPs: 1003.10 for supercomputing and 1003.11 for transaction processing, and Jim is engaged in selling the idea to ISO. Again, there are two questions: "Are you interested?" and "If so, what profiles do you want to specify?"

It is early days yet: the issue is to be raised at Technical Study Group 1's (TSG1's) meeting in Essen, Germany, in September. (TSGs are another ISO mechanism which is brought into play to handle interdisciplinary issues.) TSG1 is developing a framework for application portability, so it should consider AEPs worth adopting. In the mean time, feedback concerning useful and desirable AEPs is solicited by IEEE 1003.0.

Finally, WG15 has decided that it is time to adopt IEEE's draft 1003.2 standard, *Shell and Application Utility Interface for Computer Operating System Environments* as the basis for its recently approved movement towards a corresponding international standard. A little procedural gymnastics is involved: the first SC22 meeting that could authorise such an adoption is in September, and it is not clear which draft of 1003.2 will be current at that time: if things go

badly it could be draft 8; if to plan, draft 9. Also, draft international standard 9945, which corresponds to IEEE 1003.1, must be renamed to 9945.1, allowing 1003.2 to form the basis of 9943.2. It took three separate resolutions to put this particular show on the road!

Those, then, are the issues I consider important to members of EUUG and USENIX. Beyond them, there was much procedural stuff—more, for example, than at an IEEE meeting, even though WG15 is apparently quite informal by ISO standards (sorry).

The Concurrent C Programming Language—Book Review

The Concurrent C Programming Language
Narain Gehani and William D. Roome
Silicon Press ISBN 0-929306-007 (US) Price $29.95, Paperback, 303 pp.
Reviewed by Lindsay F. Marshall, Computing Laboratory, University of Newcastle upon Tyne, UK.
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Concurrent C has been around for several years but has not yet achieved much popularity. The publication of this book, which serves as both an introduction to the language and to some of the principles of concurrent programming, may help to change this.

As its name suggests, Concurrent C is yet another extension of C and the authors have made the wise decision to assume that readers are familiar with the basic language. This means that they can describe the new features in full detail without making the book too long. Their approach is to use examples to show how Concurrent C programs are built up and in the early chapters they lead out the old warhorses of parallelism—the dining philosophers, readers and writers, etc., etc. Not that there is anything wrong with these examples, but it might be nice to see some new ones appearing in the literature (for example the vomiting philosophers which uses backtracking to break deadlocks).

Once the language has been fully described the authors work through some larger examples. This section is excellent and the examples are interesting and relevant. There is a lot of raw code presented in this chapter, but it still manages to be readable. Sections covering discrete event simulation and models of concurrent programming are also good. The book even describes programming in Concurrent C++—an extension to an extension that comes free as the Concurrent C compiler is based on the cfront program used by C++.

The only real fault with this book is that it is rather dry and lacks the humour and sparkle that enlivens the best textbooks. The look and feel of the book will be familiar to most people as it was produced with the usual UNIX text processing tools. This does tend to give a cozy familiarity to the text which is jarred only by the Concurrent C language itself whose new features are rather too ADA like for my comfort, though the language seems much more flexible and easy to use than ADA tasking.

If you want to know more about Concurrent C this is a good book, which is lucky as there are no others. You may be a little stuck if you want to use the system though, as the book has no information about how to get hold of a copy.

Call Doc Strange

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Colston Sanger is a lecturer at the Olivetti International Education Centre, Haslemere, UK and a visiting lecturer in the Faculty of Engineering, Science and Mathematics at Middlesex Polytechnic. After a recent domestic deluge he is very glad he bought a VAX...

The null column

It's summer and even in England it's just too hot to be `awk`ing and `grep`ing the night away — so this is a sort of *null column*, in which I chatter on for a page and a half about nothing in particular. (**Ed**: *thinks* ... as usual, *mutter, mutter...*)

Anyway, I've been playing with a PC running UNIX System V/386 Release 3.2 — you know, the AT&T and MICROSOFT joint effort that provides XENIX compatibility.

I quite like it. Mind you, there's an awful lot of new stuff: enhanced security, a virtual terminal manager, the Framed Access Command Environment (FACE) and its underlying FMLI, a shell-like, but object-oriented forms and menu language interpreter, a new LP spooler, *etc*, *etc*. These are only some of the obvious things, but there's enough in that list alone to make it seem as though you practically have to re-learn the whole UNIX system after each new release.

Enhanced security

Do you remember how to add a user in the old days? It was simple: you edited the `/etc/passwd` file with your favourite text editor, did a `mkdir` and a `chgrp` and a `chown`. Took about thirty seconds.

Can't do that anymore. Because now there's a shadow password file, `/etc/shadow`, and the two files `/etc/passwd` and `/etc/shadow` have to be in step. Here's the `/etc/passwd` file:

```
root:x:0:1:0000-Admin(0000):/:
daemon:x:1:1:0000-Admin(0000):/:
bin:x:2:2:0000-Admin(0000):/bin:
sys:x:3:3:0000-Admin(0000):/usr:
adm:x:4:4:0000-Admin(0000):/usr/adm:
.
.
.
colston:x:401:400:Colston Sanger:/usr2/colston:
```

It has permissions like a traditional `/etc/passwd` file, looks like a traditional `/etc/passwd` file — except for the 'x' where the encrypted password used to be. Here is `/etc/shadow`:

```
root:FzAe93HPeFqs6:7113:14:28
daemon:NONE:7113::
bin:NONE:7113::
sys:NONE:7113::
adm:NONE:7113::
.
.
.
colston:cQ5s8xuhi/1pI:7117:14:28
```

This is where passwords are stored in SVR3.2, and the file is readable only by `root`. The other three fields are — I think — the number of days since the beginning of time (1 January 1970) that the password was last changed, the minimum number of days that must elapse before it can be changed again and the maximum duration of the current password.[1]

What else? When you login, it checks the timestamp on the file `$HOME/.lastlogin` to tell you when you last logged in. Moreover, if the dreaded hacker attempts to login, a record is written to `/usr/adm/loginlog` (if the file exists).

On a related topic, it is now possible to set the 'sticky bit' on directories that are writeable by all users (typically, the public directories `/tmp` and `/usr/tmp`) with the effect that files in those directories can only be removed by their owners.

The virtual terminal manager

`vtlmgr`, the virtual terminal manager is a great improvement on the old `shl` shell layers. It's certainly impressive to be able to have FACE (of which more below) running in one virtual terminal, `sh` in another, a `cu` in yet another, while surreptitiously working out expenses with **Autoroute** in a DOS session under **Simul-Task 386** in yet another. All it takes is an ALT-SYSREQ-FKEY to switch from one to the other. Better still is running multiple DOS applications, each in its own virtual terminal. I've had **Autoroute** running in one virtual terminal and **SuperCalc 4** in another. I've also had **Autoroute** running on a dumb terminal (a **Wyse 50** with magic cookie glitch) — and I've seen **Lotus 1-2-3** running on a **Wyse 60**, though nobody ever believes me when I say so.

FACE

FACE, the Framed Access Command Environment, is nice. It's a bit like the user interface on the old 3B1 UNIX PC. It works in colour on the console, and in monochrome on a dumb terminal. At the moment I'm only using it for system administration, but it's really a desktop environment for naive users for organising files and invoking applications. For example, a user can store information in files and folders in a personal filecabinet (the standard metaphor!) and discard information no longer needed in a wastebasket.

FACE can be invoked directly when you login or from the shell. The first screen you see is a menu with options for Office of <login>,[2] Printer Operations, Programs, System Administration (if you have system administration privileges), MS-DOS, UNIX System or Exit. Choosing Office of <login> takes you to your personal filecabinet; Printer Operations is a front-end to the new LP Spooler package; Programs is for starting up programs or third-party applications — what appears here is customisable by a system administrator; and MS-DOS or UNIX System gives you a DOS (if you have it installed) or UNIX session.

FACE is actually an application built with the Forms and Menu Language Interpreter (FMLI). I can't tell you very much about FMLI because somebody has borrowed my *FMLI Programmer's Guide*, so what I do say is based on the notes from the UNIX System V Release 4 Software Developer Conference.

FMLI syntax is a bit like shell. The language is made up of *descriptors* or variable names that define the attributes of the form, field or menu you are developing. For example, here is a simple FMLI menu:

1. Yet two more files enter the story here: `/etc/default/login` and `/etc/default/passwd` which among other things (the *ulimit*, for example) contain parameters that determine whether a password is required, the minimum number of characters that it must have and default password ageing information.

   By the way, `passwd(1)` now has a set of options.

2. Where the <login> is your login name.

```
#Start a new menu
#
menu="AT&T FACE"

# Indicate where to look if they hit the HELP key
#
help=OPEN TEXT $VMSYS/OBJECTS/Text.face

# Add menu items, along with actions upon their selection
#
name="Office of $LOGNAME"
action=OPEN MENU $VMSYS/OBJECTS/Menu.office

name=Printer Operations
action=OPEN MENU $VMSYS/OBJECTS/Menu.printer

name=Programs
action=OPEN MENU $VMSYS/OBJECTS/Menu.programs

name=System Administration
action=OPEN MENU $VMSYS/OBJECTS/Menu.system

name=UNIX System
action=unix

# Dynamically generate user's own menu items (if defined)
#
`readfile $HOME/pref/office`

name=Exit
action=exit
```

What does the code do? Using the *menu* descriptor, it creates a new menu titled 'AT&T FACE', which you'll probably recognise as the one I described earlier. `menu` is an example of a *single instance descriptor*: one that can appear only once in an object definition file.

Next is the `help` descriptor, which tells FMLI where to get help text if the user presses the HELP key. `help` is another single instance descriptor.

After `help` comes a collection of `name`/`action` pairs. `name` is a *multi-instance descriptor*: one that can appear several times in a definition file. As you can see, each occurrence of the `name` descriptor adds an item to the menu.[3]

3. I just checked the real code and it is a bit more complex than this, but the general structure holds.

(I don't think I should pirate any more or You-Know-Who isn't going to be very happy, but I hope that's enough to give you the flavour of FMLI. Perhaps the best thing is to write a whole column on FMLI, after I've had time to get to grips with it.)

Some things that can catch you

I've mentioned `/etc/passwd` and `/etc/shadow`. If by chance the two do get out of step you can use `pwconv`(1M) to set them right.

I also mentioned the *ulimit* in passing. Yes, it is a tunable parameter, but it is also set in `/etc/default/login`.

Also, watch out for the 'XENIX compatibility'. For example, say you have a colour monitor on the console. So you change the value of `TERM` in `/etc/profile` and ... it's still in monochrome. Why? Because you also need to change it in

`/etc/ttytype`.[4]

Finally, be extra-careful with `/etc/inittab`! As part of the new Installable Drivers scheme in UNIX/386, `/etc/inittab` is rebuilt every time the kernel is rebuilt. Specifically, it is replaced by `/etc/conf/cf.d/init.base` appended with any files in the `/etc/conf/init.d` directory.

As another famous columnist might say

Winding down... Obviously there's much more that's new in UNIX System V/386 Release 3.2. I just haven't got round to looking at it yet. However, I have installed AT&T XWIN, based on X.11 Release 2 and a demonstration copy of OPEN LOOK. More on that in yet another future column.

UNIX: The Minimal Manual—Book Review

UNIX: The minimal manual, Jim Moore, Computer Science Press, Inc, 1989, ISBN 0-7167-8195-6. (UK) Price £14.95, Soft Back, 238 Pages pp, Size 23 cm x 15 cm. Reviewed by Susan D. Jackson of Xi Software Ltd.

The minimal manual is an introduction to the basic commands and features of UNIX for anyone unfamiliar with computers. It describes how to make files and directories and use the basic features of electronic mail, how to create documents using the editing, formatting and printing facilities, and how to format bibliographies automatically. The minimal manual tries to do this in a way that is easy to understand.

On the whole the book succeeds in being easy to understand, and gives a reasonable introduction to UNIX. It makes a good reference guide to basic features. The chapters on editing and formatting are easy to read and introduce the beginner to the essentials.

There is, however, a tendency to oversimplify, leading to some inaccurate statements. The introduction states that the commands covered are found on almost all versions of UNIX and that the author will note where this is not the case. The commands used are, in fact, heavily orientated towards the Berkeley version of UNIX and commands specific to this version are not always noted as such.

There is very little information about the use of terminals, and how to correct mistakes made while typing in commands. The assumption that CTRL C will stop any command could be very confusing to a beginner, as is the statement that if CTRL S is used to stop scrolling on the screen, pressing the space bar will start it again, as they do not work on every system. No alternatives to these commands are given nor is there any indication that there may be differences amongst systems. There is no mention of the shell or the different versions, only that you may have a version of UNIX with the 'Berkeley enhancements' if your prompt is a %. This of course only indicates that the user's shell is the 'C'-shell, and is no indication of the presence or absence of any other Berkeley enhancements.

The chapter on editing was very clear and easy to read, apart from one mistake where the command given for 'ed' to write at the beginning of the file was wrong. I can imagine the confusion that might result from this mistake. The chapter makes no attempt to explain the concept of the 'file pointer' around which it is built. This will make it very difficult for a user to understand the behaviour of the editor if they make a mistake.

The descriptions of the formatting macros in chapter 6 were good, but spoilt by an inadequate explanation of formatting and the different formatting programs and macro packages, and the lack of examples. As the book is aimed at the complete beginner examples are essential.

Who should buy the book, i.e., individual, lecturer, beginner... This book could be useful to a complete beginner wanting an easy introduction to UNIX. Someone using a standard Berkeley-derived system should have few problems following this book, but a user with a 'vanilla' System-V implementation would soon be lost in confusion with missing commands and system behaviour different from that described.

4. This seems to me a case of the tail wagging the dog.

Software | Review

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Donal Daly works as a researcher for the Distributed Systems Group in Trinity. His current work is involved in developing UNIX on top of an object-oriented distributed operating system. Previously he had system management responsibilities for System V and Berkeley UNIX systems within Trinity. Donal is the chairperson of the Irish UUG.

Introduction

Welcome again to *Software | Review*. This column reviews software that appears on the net. This is software that is posted to the source news groups and is free. I welcome contributions from you. In fact I actively encourage it!! You can send contributions to me at the above email address. In the future, I will accept reviews of commercial software as well.

This month's column includes a review by me on a very useful utility called *thack*. It was just the utility I needed, when I had to produce some troff quality output. It is this sort of utility I would like you to send me reviews on. This is followed by a review on UK-Sendmail, which is a sendmail configuration kit written as a collection of shell scripts and awk programs. I dunno whether the authors of this package deserve a medal for bravery, or need to be locked up!!

This is followed by a short report on GNU, what it is, and what is currently available. This is followed by a review of the GNU C compiler, *gcc*. We round off this month column with a update on European archive sites.

If you are sitting comfortably now, we shall begin.....

Thack

Thack is a filter which converts troff output into PostScript. It was written by Gareth Waddell and posted by Phill Everson (*everson@cs.bris.ac.uk*) to *comp.sources.misc* (volume 7). Two patches have also been posted to the same newsgroup recently.

A while back I needed to print out some documentation written using the ms macros package. Normally I use LaTeX, which we can generate high quality output using our laser printer. Plain old nroff output was just not good enough, and this documentation contained some tbl commands which when processed came out a mess on our printers.

At the time thack appeared in comp.sources.misc, I thought, this is a utility I might need some day, so I saved a copy of it. Well it was just what I needed. The distribution contains a makefile and everything compiled OK. To use it, I just passed the output from troff into thack and the troff

output was translated into PostScript. This PostScript was then transferred down to an Apple Macintosh for printing (using a Mac utility called SendPS). The resultant output was of very good quality. Output from eqn and tbl is not a 100% compatible but it's pretty good.

This is a good utility, in the great the UNIX tradition of doing one thing and doing it well, and also of inter-working cleanly with other utilities. It has now achieved the 'dubious' honour of residing in my *7/src* directory.

UK-Sendmail

Jim Reid <jim@cs.strath.ac.uk>

UK-Sendmail is a sendmail configuration file compiler kit. It is actually a collection of shell scripts and awk programs that generate sendmail configuration files that really work! Initial work on the package was done by Jim Crammond of Imperial College London (*jac@doc.ic.ac.uk*) which led to version 1.5. Further enhancements were made, notably by Jem Taylor of Glasgow University (*jem@cs.gla.ac.uk*). These were combined to produce the definitive version: 2.1.

The package produces sendmail.cf files that can deal with most (all?) common mail configurations and addressing styles. The package has support for SMTP (over ethernet as well as the Internet), uucp, JANET, DECnet, CSnet (using pmdf), Xerox mail over ethernet as well as local mail. In addition, it can configure sendmail to pass mail into the network news system. It can also make sendmail hide local hostnames, i.e., to the outside world, all your mail appears to come from one domain. It is generally a good idea to do this so that only your site need be aware of your local mail topography. It makes life simpler for everyone.

The package is easy to use. All that is required is for the user to edit a few template files to tell the package about the local mail topography—your domain name, lists of hosts on your ethernet, local hosts with particular network links (e.g., DECnet or UUCP), UUCP site name and so on. Once these are set up, the user simply runs a shell script and *voila!* a working configuration file is created.

UK-sendmail can make sendmail perform domain-based addressing, fully qualifying partially specified domain names. As an option, it can also swap domain ordering around to deal with big-endian and little-endian addresses. This is mainly a problem for the people on JANET who use different domain ordering from the rest of the world. It is also possible to arrange that hosts that are for mail purposes identical share one configuration file. This is particularly handy for diskless workstations that might otherwise use symbolic links to point at private file space.

A number of support programs are also provided. These include a simple authorisation program to control access to particular mail channels by certain users or hosts. Another program provides a mail interface to the netnews 'inews' program. A facility to support distribution lists is also included.

The configuration files produced by UK-sendmail work in a different way from the ones that most vendors supply. The major difference is that the configuration files generated by UK-sendmail do not perform routing based on address syntax. It converts all mail addresses into a canonical form and then decides how to deal with the resulting canonical address. Before invoking the appropriate sendmail mailer, the configuration file then rewrites the address into the appropriate syntax for that mailer.

For instance, suppose sendmail is given an address like *foo!user* when domain foo is actually an ethernet host. If sendmail routed on the address syntax, this address would imply a uucp mail transfer. The mail would probably fail because domain foo could not be found by the uucp system. By first converting to a canonical form, sendmail would then look up domain foo, realise that an ethernet mail transfer by SMTP is needed, convert the address to RFC822 syntax (i.e., *user@foo*) and then perform the SMTP transfer. It is amazing to invent bizarre mail addresses and see how UK-sendmail makes sendmail 'do the right thing' every time. Jim and Jem deserve special credit for providing something that is extremely useful and takes the pain out of configuring sendmail. Most sites who have used UK-sendmail find that they never have any more mail configuration problems once the files it creates are installed. What more could a postmaster want?

The package comes with plenty of documentation—an Overview, a User Guide/Installation Manual and there are man pages for the support programs. Annotated example template files are provided for the most usual site configurations, taken directly from the

files used to generate the configuration files used at Glasgow University.

UK-sendmail has been around for some years now. The latest release has been on widespread test for several months in the UK. This was so that any remaining bugs could be found and fixed before the package was posted all over the world. The package has proved stable and reliable and, more importantly, so have the configuration files it created. A posting to comp.sources.unix and/or comp.mail.sendmail is likely. Meantime, the package is available from the Glasgow info-server (*info-server@cs.gla.ac.uk*), although this may reject requests from beyond the UK. Plans are in hand to provide copies of UK-sendmail at the national EUnet backbones.

GNU

GNU (GNU's Not UNIX) is designed to be a complete integrated system, upwardingly compatible with UNIX. Large portions of this software are available and being distributed. GNU software is not in the public domain, but is distributed under agreement known as 'copyleft'. The purpose of 'copyleft' is to insure that everybody is free to copy a program as long as the person getting the copy is free to distribute his copy further, or to modify the copy that they have received. GNU software is produced by the Free Software Foundation (FSF). The aim of the FSF is not just to produce GNU, but is dedicated to eliminating restrictions on copying, redistribution, understanding and modifications of computer programs. I will now briefly describe some of the software which is part of GNU and is available from the FSF.

Program Development

There is a C compiler called 'gcc' and it supports the 1988 draft of the ANSI C standard (it is reviewed later in this column). This compiler is now fairly reliable and NeXT build their entire system, including their port of the Mach kernel and NFS, with gcc. There is a source-level debugger called 'gdb'. Gdb supports command completion, command line editing and history substitution. Gdb also supports debugging C++ code and FORTRAN code. You can also pretty print data structures. There is also a version of gdb which can run stand-alone, so it can be used for kernel debugging, and a version which supports a serial line interface for running gdb remotely. A version which will work over UDP is being worked on.

There is a C++ compiler (g++), which is written as an extension to gcc. This is the first UNIX compiler to compile C++ directly instead of preprocessing it into C. This has benefits for debugging and efficiency. There is also an assembler (gas) and a library (libg++) with utility classes for C++. There is also a C library with a nearly complete set of ANSI C library functions. There is also a version of make called 'GNU make' (what else :-)). This version of make supports parallelism. There is a rewrite of yacc called bison.

Document Preparation

The infamous EMACS editor is also a product of the FSF. This editor must have every option or feature you would require from a editor. Then there is 'ghostscript', which provides nearly all the facilities of a PostScript interpreter. Ghostscript supports X version 11. The FSF provides extensive documentation for the software it supplies. This documentation is distributed as 'texinfo' source files. These would be processed by TeX to produce a printed manual. My EMACS manual when printed is at least an inch thick. GNU documentation can also be converted into 'info' files for browsing in emacs.

Other Software

They have a variety of other software including a re-implementation of sh called 'bash' (Bourne Again SHell). It has korn shell features as well as command completion, job control and history substitution. They have other miscellaneous utilities like ld, nm, size, strip. They claim to have the world's fastest grep/egrep and the world's fastest diff. A new fast sort has also been completed. A fast lex called 'flex' has also been released.

How do I get GNU?

There are a variety of ways to get GNU software. One way is order the latest EUUG software tape (from the Brussels conference). This tape is full of GNU software. Contact Frank Kuiper (*frankk@cwi.nl*) for more information on this. Contact your local anonymous ftp site (if your lucky enough to have one!) they are sure to hold GNU software. If you have access to the Internet (an even luckier person!!) the latest version of GNU software is kept on *prep.ai.mit.edu* for anonymous ftp. You can also send to the FSF and

ask them to send you a tape. There is a charge for this ($150-$175) but I think it is worth it, and anyway you will be supporting the FSF. For more information you should email Leonard H Tower Jr (*tower@ai.mit.edu*).

Once you have obtained some GNU software, and become hooked on it as you realise that it is good quality software, be prepared to be applying patches, as this is software that is being actively changed. These changes occur as bugs are fixed or improvements are made. It can be quite time consuming working out what the latest version is, obtaining the patches, applying them, and ensuring that everything still works as it should under your environment. Remember though, it is free after all.

GNU C Compiler (GCC)

Eamonn McManus <emcmanus@cs.tcd.ie>

The GNU C compiler (gcc) is one of the most popular and useful of the GNU products. Written mostly by Richard Stallman, its purpose is to provide a compiler that runs quickly and produces small and fast code.

Gcc recognises the C language defined in the proposed ANSI standard; in fact, it was one of the first ANSI-compatible compilers available. This means that useful new features such as function prototypes and string constant concatenation are available. Prototypes, in particular, make C programming much less error-prone.

Gcc also provides a number of its own extensions to the ANSI C language. Several of these are potentially very useful, for instance a 'typeof' operation, inline functions, and the ability to use a compound statement within an expression. However programmers interested in portability will have to avoid them or use many #ifdefs, so their worth is questionable.

The compiler is written in such a way as to be portable to different machines as easily as possible. (Porting it is easy compared to other compilers; it still isn't easy, though.) The compiler 'front-end' generates code in a Register Transfer Language (RTL) that is largely machine-independent. A machine description written in a LISP-like syntax is used to generate the 'back-end', which recognises patterns in the RTL and converts them into the native assembly language. This technique is very powerful, and makes it possible to cobble together a compiler for a new machine quite quickly. Putting together a decent machine description is considerably harder, though.

The architectures to which gcc has been ported include VAX, 68000, 32000, i386 (80386), 88000, MIPS, and SPARC. This list, which includes machines at the extremes of RISC and CISC, illustrates the flexibility of the compiler setup. Basically, any reasonably orthogonal 32-bit machine could reasonably be a target for gcc. Steve Jobs's 68030-based NeXT machine uses gcc as its only compiler.

Gcc is a pretty good optimising compiler. It applies many well-known compiler techniques, such as common subexpression detection, data-flow analysis, register combination, loop invariants, strength reduction, etc. It also uses huge amounts of memory when optimising!

Recently John Gilmore has been porting BSD UNIX through the gcc compiler. The aim of merging gcc and the Berkeley distribution is to provide ANSI C compatibility, better optimisation and improved compiler maintenance. A successful merge is seen as an important test case for gcc. The current status of this work is that the Berkeley kernel has not yet been ported to gcc, but it has been syntax checked. This of course has involved various code rewriting in the kernel. The results of this work will be made available to recipients of Berkeley's next software distribution, whenever that is.

The only other UNIX compiler which is as widely available is Johnson's Portable C Compiler (pcc), which is the basis for most compilers on commercial systems. Comparing it with gcc is a bit unfair, since pcc is considerably older. But briefly, the differences are that pcc is smaller (about a quarter of the size), and uses less memory when compiling; whereas gcc is faster when not optimising, somewhat slower when optimising, and produces much better optimised code. And of course gcc is free.

In summary, gcc is an excellent compiler that is available for a wide range of machines, and it is completely free. Long live the FSF!

Archive Sites

I have received some more information about archive sites in Europe, and the details of archive sites in the Netherlands, Sweden and Spain are presented below. At present our hardworking

backbone managers are setting up a European archive service that will be available from each national backbone. I will give you more details when they are finalised.

If you have a large collection of useful software, or a number of large software packages like X windows, or GNU software and are prepared to make up tapes for fellow EUUG members, do get in contact with me. I will publish any offers in the next issue.

Netherlands

In the Netherlands, there is a small archive located on hp4nl.nluug.nl. It is intended for use by Dutch sites only. You can access this archive by UUCP for sites connected to hp4nl (almost all Dutch EUnet sites). There is FTP access for sites connected to the Amsterdam local area network. Looking through its index, it contains a wealth of useful software including isode, X11r3, elm2, TeX, rcs, nntp, bind, ka9q and sendmail. For more information contact *dfk@mcvax.uucp*.

Sweden

In Sweden, there is software archive accessible via UUCP or by anonymous FTP. A mail service is planned in the future. It is located at the Swedish backbone: sunic.sunet.se. The software archive contains some 150MB of software including all the EUUG tapes, archives of *eunet.sources*, *comp.sources{misc,games,unix}*. Also some of the popular packages like news, rn, nntp, sendmail and all RFCs. For more information about this archive service you should contact *ber@sunic.eunet.se*.

Spain

In Spain, there is an info server located at dit.upm.es. At present it is still experimental, but widely used within Spain. It stores RFCs, the latest Berkeley networking software, uupc, sendmail, elm, rcs, des, Cnews amongst other things. For more information about this server you should email to *pepe@dit.upm.es*.

Next Issue

I hope you have enjoyed this issue's offerings. As ever, I welcome your reviews of public domain software which you found useful, like how I found thack useful, in a time of need. In the next issue I hope to review the ISIS toolkit and distributed programming environment.

The AT&T OPEN LOOK ™ Toolkit

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AT&T UNIX Software Operation

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Introduction

The OPEN LOOK™ toolkit developed by AT&T is based on the X Window System®. The Xt intrinsics, part of the X Window System distribution, provide the basic programming environment for the OPEN LOOK toolkit. The toolkit consists of a set of widgets (graphical objects) with convenience routines that make it easier to use the intrinsics and widgets. Others have often referred to this toolkit as 'Xt+' or simply 'OPEN LOOK.' The toolkit has been designed to let application programmers easily program to the OPEN LOOK Graphical User Interface (GUI). A useful toolkit not only has to provide a simple and logical Application Programmer Interface (API), but also should require minimal system resources. A well designed toolkit should adhere completely to the conventions provided by the intrinsics.

The design of the OPEN LOOK toolkit followed three fundamental principles. First, the toolkit has to be 100% compatible with the intrinsics as distributed by MIT. Second, the toolkit is designed to remove the application programmer from the intricate details related to the OPEN LOOK GUI.

This paper gives a summary of the components of the OPEN LOOK toolkit, concentrating on aspects which make it unique. Release 1.0 of the OPEN LOOK toolkit has been generally available as of the first quarter of 1989. Work is continuing on the toolkit with the goal of improving performance. Some of the goals of the performance improvements are discussed in a later section.

Parts of this paper have been excerpted from XNextEvent Volume 2 Number 1.

Widgets

Widgets are objects that are used to provide the functionality and semantics of a user interface. The routines for creating and manipulating widgets are collectively called the Xt intrinsics, and are part of the X Window System. The intrinsics monitor events related to user interactions, such as key presses and mouse motion, and dispatch the event to the appropriate widget. The widget acts on the event and may change the visual on the display. Widgets can then call application registered routines, *callbacks*, which handle the specific application semantics of the interaction. The OPEN LOOK widgets implement the OPEN LOOK interface on an X Window System base.

A simple example of clicking a mouse button in a labelled area will clarify the interaction between

the intrinsics and a widget. The intrinsics sit in a loop waiting for an event to occur. The button click event comes from the X server. The event is dispatched to the button widget because it registered interest in button events that happen inside its window. The button widget code changes the button visual to show its highlighted state, calls the application's callback, and then displays the button visual in its normal state.

The Toolkit Components

The list of widgets provided in the first release of the OPEN LOOK toolkit is shown below. The widget class names marked with an asterisk (*) in the list are close derivatives of the original Core Components.

- **Menu Related**

```
AbbrevStack    (abbreviated button stack)
ButtonStack    (menu with quick access to default choices)
Exclusives     (choose one of many)
Menu
Nonexclusives  (choose several of many)
```

- **Composites**

```
BulletinBoard*     (simple layout)
ControlArea        (row/column layout)
Form*              (geometric constraint layout)
ScrolledWindow*    (scroll any widget)
```

- **Text entry, control labeling**

```
Caption
StaticText*    (eneditable, multi-line)
Text*          (full scrolling, user editable, multi-line)
TextField      (left/right scrolling, editable, single line)
```

- **List manager**

```
ScrollingList (linear/hierarchical, scrolling)
```

- **Simple controls**

```
CheckBox       (toggle)
OblongButton*   (command button)
RectButton*     (toggle)
Slider*
Scrollbar*
```

- **Dialog boxes**

```
Notice          (modal box, freeze application)
PopupWindow     (command entry, property settings)
```

No Changes to Intrinsics

As stated in the introduction, one of the primary design goals was not to change the intrinsics. The OPEN LOOK toolkit runs with the standard X11R2 intrinsics, and the next release of the OPEN LOOK toolkit will run with the X11R3 or X11R4 intrinsics. The result of achieving this goal is that the time a programmer invests in learning how to use the intrinsics pays off when developing an application using the OPEN LOOK toolkit. No special widget creation routines are needed, and no different naming conventions are required. The naming conventions given in the intrinsics documentation for widget classes are

strictly followed, so that interesting names like "OblongButt" show up.

Providing a Simple API for a Complex GUI

The OPEN LOOK GUI is a sophisticated graphical user interface. Details such as pushpins, menu modes and popup's behaviour are issues that most application programmers do not care to address. So, the OPEN LOOK API was designed to free the application writer from these details. The feedback from early customers has been positive. The next five sections illustrate the simplicity of the API with several examples.

Simplified Menu Subsystem

Conceptually, a menu is a set of choices tied together in one package. In pseudo code, this can be expressed as:

```
menu = CreateMenu();
for (each menu item)
    CreateItem(child of menu);
```

This is basically how the OPEN LOOK toolkit works. An application writer creates a **Menu** widget, then populates it with other widgets representing the **Menu** choices. It is that simple.

But how does this work? In the OPEN LOOK interface, every menu pops up on the press or click of the menu button. The location and behaviour of the pop-up requires that it behave largely independently of a window manager or any other windows in the application. Thus, every menu in an application built with the OPEN LOOK toolkit is a pop-up widget, a subclass of the **Shell** class of widgets. Creating a menu is done with the *XtCreatePopUpShell()* routine from the intrinsics. The **Menu** widget provides any menu management functions needed, and automatically creates the menu pane widget that will contain menu items. This step is necessary to avoid attaching multiple widgets as children of the menu-subshell. (This is a problem for X11R2 intrinsics, but no longer an issue in X11R3). The widget ID of the menu pane is available to the application as a resource of the menu widget. The complete C fragment for creating a menu of four colours is shown below.

```
1   Widget menu, pane;
2   Arg arg[1];
3   static char *name[4] = {"Red", "Blue", "Orange", "Green"};
4   int i;
5
6   menu = XtCreatePopupShell( "menu", menuShellWidgetClass, parent, arg, 0);
7
8   XtSetArg (arg[0], XtNmenuPane, &pane);
9   XtGetValues(popup, arg, XtNumber(arg));
10
11  for (i=0; i<4; i++) {
12    XtSetArg (arg[0], XtNlabel, name[i]);
13    XtCreateWidget (name[i], oblongButtonWidgetClass, pane, arg, 1);
14  }
```

The only difference between this code and the conceptual program outlined earlier is the need to indirectly get the menu pane widget ID. This ID is obtained by the *XtGetValues()* on line 9 of the code fragment.

To make it even easier to build a menu in an application, the same widgets that are used inside a menu can be used outside a menu. Command buttons, exclusive and nonexclusive choices can be put in menus exactly as they can be put in a control area outside a menu. Furthermore, the menu pane is a **ControlArea** widget manager, which is the same widget manager used outside menus. This reduces the complexity of having different kinds of buttons, controls, and widget managers depending on where they are used.

Simplified Dialog Boxes

The same technique used in the menu subsystem is employed in the dialog boxes. The OPEN LOOK GUI interface specifies three types of dialog boxes: command windows, property windows, and notices. They differ in their intended use and operation. The API provides the command window and property window through

the **PopupWindow** class, and the notice window is supported through the **Notice** class.

A command window is a pop-up window that is used to execute application commands or set parameters. Buttons allow the user to exit when done filling in the information or to back out of the operation. When the user operates a button, the command window usually pops down. The user can keep the window from popping down by operating a "pushpin" widget in the window header; the pushpin metaphor is that the window can be "pinned" to the screen to keep it from going away.

A property window is used for getting more persistent information, typically attributes of an object in the application. The property window has several controls of arbitrary types that represent the state or description of the application. Buttons on the bottom of the window allow the user to apply the new state or reset the controls to their original states. Applying the new state usually dismisses the property window, although, as with the command window, a pushpin widget allows the user to keep it around.

The notice is used for alerting the user that an action may have unintentional consequences, like quitting without saving, overwriting a file, or initiating a long running and uninterruptible transaction. It typically has a few buttons that give the user a choice of continuing or not. The notice goes away after the user has operated a button, so there is no pushpin.

Each of the dialog boxes is implemented as a pop-up shell, like the menu. Each automatically creates the "pane" that will contain the text fields, buttons, and other controls needed by the application. Furthermore, each dialog box detects when it should popdown, thus freeing the application writer from the details of the *look and feel.*

By detecting when the user has operated a control (typically a button), the dialog box can automatically remove itself from the screen. This allows the OPEN LOOK toolkit to hide the pushpin feature from the application; the application does not have to figure out the state of the pushpin to decide if a pop-up can be popped down. However, the dialog box sometimes needs verification that the user has filled in enough information, or that the user's information is correct, or that the user has operated the correct control. The dialog boxes provide a callback that allows the application to "OK" the popdown before it happens. This division of responsibility puts the *look and feel* concerns (is the pushpin in? is there an OK button that was depressed? did the user dismiss the window with a window manager function?) into the hands of the widget, and gives the application control of the semantics of the action.

Widgets are Device Independent: Displays

The OPEN LOOK GUI trademark guide specifies exact size and shape of the visual elements using engineering drawings. The networking supported by the X Window System allows clients built with the toolkit to run on any monitor of any resolution supported by an X server. These facts motivated a unique design that achieves device independence in the OPEN LOOK widgets.

The OPEN LOOK widgets are device independent. Two related methods are used to achieve this. First, those visual elements that can be algorithmically drawn are drawn using real-world coordinates. These are converted to pixel coordinates using simple conversion routines supplied with the toolkit. Second, those visual elements that are best drawn "by hand" are made into fonts or bitmaps. We prefer using fonts, even for the glyphs, because of the drawing speed and minimal memory requirements. The second method requires packaging enough fonts and bitmaps to cover all the device resolutions that the OPEN LOOK toolkit supports. The OPEN LOOK requirements cover resolutions from as low as 50 DPI (dots per inch) to just under 100 DPI, in aspect ratios of 1:1, 5:6, and 3:4. Obviously, the toolkit does not cover all possible displays; when running on an unexpected resolution it uses the fonts and pixmaps that fit best. Adding a new resolution to the product is simple; new fonts and bitmaps are just added to the package.

Widgets are Device Independent: Keyboards and Mice

Device independence is required for more than the display device. Servers have different keyboards and pointing devices. The OPEN LOOK GUI specifies that a user may alter the key and mouse bindings to tailor them to his or her own preferences. The users' preferences must apply across all applications running on the server.

It would be inconvenient to require each section of code that is involved with input to respond

variably to mouse button one, two, or three (or four, or five, or shift-button-one, control-button-one, etc.), depending on the user's preference. Instead, the OPEN LOOK toolkit provides a layer on top of the intrinsics' translation manager that *virtualises* the mouse buttons and keyboard. A typical translation table for a widget in a non-OPEN LOOK intrinsic-based toolkit will look like the following:

```
Button1<Enter>:    highlight ()
Button1<Leave>:    normal ()
```

This example means that when the user moves the mouse pointer into the widget with button one pressed, the widget procedure *highlight* is called. The *normal* procedure is called when the mouse pointer is moved out of the widget. The widget could use a more general translation table that accounts for all possible choices the user might want to use. But then it would be duplicating much of the work of the translation manager, deciding which mouse events are associated with "highlight" and "normal". Every other widget would have to do the same thing.

The OPEN LOOK toolkit provides a routine used by each widget to convert a device independent translation table into a standard translation table. The virtual translation table for the example given above would look like this:

```
SelectBtn<Enter>:    highlight ()
SelectBtn<Leave>:    normal ()
```

The basic idea behind translations is still the same; the same syntax is used. The change is simply to use virtual names (SelectBtn) instead of device specific names (Button1). The conversion routine called by each widget looks for the predefined functional names and replaces them with the specific names that represent the mouse buttons or keys the user has decided to use. Each widget deals with a consistent name (SelectBtn for all "selection" operations, MenuBtn for menu operations, etc.) When the user changes the mouse button assignments, the changes are handled in a single place within each client.

Help for the User

The OPEN LOOK interface specifies that a help dialog box, containing a short explanatory message, pops up whenever the user presses the "help" key. Help is region sensitive, that is, the help message displayed is related to the position of the mouse pointer when the help key was pressed. A magnifying glass in the margin of the help window shows the help context by capturing a small snapshot of the screen.

The application writer does not have to provide the help information for each part of the application window. The OPEN LOOK widgets provide "default" help on how to operate them. This frees the application writer from writing help for every widget on the screen.

The "default" help can be replaced with application specific help on a widget by widget basis, or on a widget class basis. Registering help text frees the application from run-time help requests; the toolkit acts on all help key events to display the appropriate text.

Help can also be registered for a text string. The intent here is to provide a simple hook that lets the user get help about a word or phrase within the help text itself, if he or she needs more detail. This same feature also allows every help message to be identified with a word or phrase, even those help messages assigned to a widget or window. This allows later reference to help text by word only, such as when identical help text is to be assigned for other widgets or windows.

Since static help registration does not solve all applications' needs for providing timely help to users, the help registration allows the text to be supplied at the time the user requests help. This is called an indirect help registration. For ultimate control over presentation of help, a callback can be registered instead of help text. This effectively passes the help key event to the application.

There are certain applications that may need control of help before the dialog box is popped up. For example, some character-based applications within an OPEN LOOK framework require letting all keyboard operations pass through to the character application. This typically happens inside a terminal emulator client (for example, xterm.) The xterm application, for instance, uses the callback to know when the help key has been pressed. Then, it simply generates the equivalent key sequence and passes it on like any other key sequence to the character-based application running within its window.

Performance

The main motivation for developing a toolkit is to encourage application writers to use toolkit

components freely. Ideally, the toolkit objects will require so little of the system's resources that it will become noise in the application's overall system resource usage. AT&T is currently working on improving the performance of the OPEN LOOK toolkit. Preliminary data shows that the performance release requires 50 to 75 per cent less resources than the first release of the toolkit.

A thorough investigation of the toolkit has shown two areas which promise to shrink demands for system resources significantly: memory usage and protocol request reductions.

Memory Usage Reductions

Memory usage is responsible for the most severe performance problems. Once the size of the working sets surpasses the available physical memory, the system begins to thrash. Three areas have shown the most promise: shrinking the static size of the toolkit library, reducing dynamic memory allocations by the widgets, and keeping the server small.

Static Size Reductions

Converting the intrinsics and toolkit libraries to shared libraries reduces the static size significantly. The OPEN LOOK environment, itself, typically runs three executables which link these libraries. Sharing the text of these libraries saves at least two copies of the text. Further reductions can be realised by increasing code reuse. Code reviews of the toolkit have found common functionality implemented in different widgets.

Dynamic Memory Reductions

Dynamic memory savings are especially important for applications which use many widget instances. We developed a tooled version of the intrinsics that printed out sizes of memory allocations exceeding a user specified threshold. By varying the threshold, we were able to identify the areas that used the most memory. Not surprisingly, we discovered high memory consumption for widgets that are subclassed off large superclasses. Furthermore, we found that constraint widgets were expensive to use, since they allocated relatively large amounts of memory for each child that was added to them. Finally, we saw that every byte saved in frequently used widgets was worth the effort. One technique used to save data space for frequently used widgets, was to group data and cache it in a list pointed to from the widget class. In the worst case, every widget is unique and the number of items in the list of data groups equals the number of widget instances. (This would use approximately the same amount of data space as storing the data in the widget instance record.) The best possible scenario is that all widget instances use the same data group, thus requiring only one data grouping. This is often the case for buttons.

Keeping the Server Process Small

The server process is kept small by reducing the number of dynamically allocated data structures. Using a tooled version of the server we were able to identify those structures that were frequently used or excessively large. Thus, our efforts focused on reducing the number of windows, GCs, and pixmaps. Converting frequently used widgets to *Windowless Geometric Objects* (WGOs, DEC calls them gadgets), saved a large number of windows. Utilizing Xt's caching scheme for GCs in an optimal manor reduced the number of GCs allocated. Commonly used pixmaps were moved to font characters. Thus the server provided caching for these pixmaps across all applications.

Protocol Reductions

In general protocol requests are expensive, because they involve interprocess communication. The general rule is to minimise the number of requests, especially those that generate replies. A specialised tool was developed to display protocol request and replies. Looking at the data showed obvious extraneous events and areas for optimisation.

Conclusion

AT&T's toolkit provides a simple to use application programmer interface to the OPEN LOOK GUI. The OPEN LOOK toolkit is fully compatible with the MIT intrinsics and provides a host of new and innovative features.

EUUG Software Distribution

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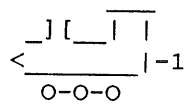

This article was supposed to appear in the spring issue of the EUUGN, but it failed to reach the editor before the critical time. Electronic transmission is still not entirely reliable. Oh well, let's hope it will work this time.[1]

As you read this, the Brussels conference will already be over, for those of you who were there, no more than a memory of rainy days, nice cars, and especially very good beer.
So, what news this time from the Software Distributions, you might ask? Well, quite some things actually. First the new software distributions. New are the following:

There is a new version of the ISODE distribution: version 5.0. This will replace the older version (4.0) on the EUUGD14 distribution. Those of you who ordered, but have not yet received this distribution, will automatically get the new version 5.0.

Second, those of you who missed announcements via other channels, like the EUnet News, might be excited to know that the latest release of the X Windowing system is now available as an EUUG Software Distribution. The X11R3 is available on EUUGD15. This distribution contains the entire release in compressed format. Uncompressed, this totals to some 87 Megabytes, so make some room on your (no doubt over crowded) disks before you start playing with this.

Thirdly, there is again a new conference tape: the EUUGD16, Brussels conference tape, containing all the GNU software that I could lay my hands on. See the distribution list for more details.
As the GNU material on other distributions has always been a major reason for people to purchase these distributions, I am certain that this distribution will be quite popular.
I will do my best to try and keep the latest versions of the various programs on this distribution, but can not really promise that. A lack of enough time is the main reason for this.

People who have been to the Portugal conference October last, will no doubt remember the talk about ET++ from people from the University of Zurich. I have been asked quite often lately whether this material will appear on a future EUUG distribution. For those I have good news. ET++ is available now as a new EUUG distribution: EUUGD17. I have recently received a tape from Zurich with the permission to redistribute the software for EUUG members.

Other news

As some of you may have noticed, lately I have not been quick with responses on requests. Without trying to excuse myself, I must say that there are some reasons why this is so. I hope you understand that my employer is very nice in letting me do things for the EUUG, but he prefers me keeping myself busy with 'more important' matters. This, a general lack of time and a growing number of requests for distributions, has led to a severer backlog of requests. I have been busy though, to rearrange the processing of distribution requests, and can now say that I think I have found a way to speed up the processing.

1. It had to be transmitted 3 times: it first failed due to a "." all on a line by itself, and then due to /usr/spool going full on some machine!

This should already have taken effect when you read this. We do need some time of course to clear the backlog. I still can not give any guarantee about delivery times, but in the future this surely should be a matter of weeks, and not of months (and I am keeping my fingers crossed behind my back ...).

One last remark. Sometimes people/companies send a cheque with their request. I urge you not to do this. With the current setup, you will receive an invoice with your requested software. Cheques are often difficult and expensive to cash. Thank you for your cooperation.

That's it for now. Below you'll find the list of currently available tapes and how to order them.
As always, anyone is invited to make their own tools, games, etc., available for publication on an EUUG tape. Please contact me for more details. Don't hesitate, just put the results of many nights of serious programming and hacking into the public domain, and you might even become famous!

This is a list of all the current (August 1989) EUUG software distributions. It is a short description of the available tapes. Any changes to the contents of the tapes, as well as announcements of new tapes will be placed in the EUUG Newsletter.
Prices of the tapes are in Dutch guilders (DFl), and do not include VAT-taxes. Prices include postage cost for surface mail within Europe. Any special shipment costs, like with DHL, will be billed through.
The first price listed is for reel-tapes in tar 1600 bpi format, the second one is for distributions on cartridge tapes in QIC-24 format. Prices for 800 bpi reel tapes and QIC-11 cartridges may differ from the ones listed.
Note that you have to be an EUUG member (or a member of a local UUG) to obtain tapes at list prices. Non-members will have to pay an extra DFl 300,- per tape.

EUUGD1 R6: UNIX V7 system, specially made for small DEC PDPs (11/23, 11/34, etc.). The Kernel supports the UK terminal driver. V7 source licence minimum.
Price: DFl 120,-/180,-

EUUGD2: Early Pascal compiler of the Free University of Amsterdam. V7 source licence minimum.
Price: DFl 120,-/180,-

EUUGD3 R3: Currently not available.

EUUGD4: Software tools, sampled by the Software Tools Users Group. Most of the software is written in Ratfor, for which a Fortran support tool is included. This tape is available in different formats: DEC RSX, DEC VMS, UNIVAC, IBM MVS, UNIX tar, MIT line feed format, and MIT card format (80 columns).
Price: DFl 150,-/180,-

EUUGD5: A collection of benchmark programs made up by EUUG.
Price: DFl 60,-/180,-

EUUGD6: (USENIX 83.1) USENIX tape, containing contributions from various UNIX System Group Members. This is a licence dependent distribution: V7, V32, SIII, V6 or no licence disclosure available.
Price: DFl 240,-/300,-

EUUGD7: UNIX|STAT Version 5.2. A collection of about 25 data manipulation and analysis programs written in C by Gery Perlman.
Price: DFl 60,-/180,-

EUUGD8: A collection of useful software, based on the so called Copenhagen tape (EUUG UNIX conference Autumn 1985).

EUUGD9: A collection of useful software, based on the so called Florence tape (EUUG UNIX conference Spring 1986). Price: DFl 150,-/210,-

EUUGD10: MMDFIIb. Multichanel Memo Distribution Facility (version IIb). This is a powerful, domain oriented mail system with access control and the ability to communicate over a variety of network systems including TCP/IP, JANET, UUCP, PHONENET, etc. It has been ported to a variety of UNIX's including but not limited to 4.[123]BSD, 2.9BSD, System III/V on a variety of different hardware. You should first obtain a licence agreement by sending a message to euug-tapes@mcvax. Return the signed licence with your order.
Price: DFl 90,-/180,-

EUUGD11: This is the 'Boat' tape; the Helsinki EUUG 1987 spring conference. It contains about 25 Megabytes of programs, games, etc. Including: jove, less, nag, news, rn , uEmacs, uuencode and lam.
Price: DFl 120,-/180,-

EUUGD12: This is the Dublin EUUG 1987 autumn conference tape. It contains about 26 Megabytes of programs, games, etc. Including: copytape, crc_plot, fastgrep, jove, kermit, notes, uupc, nethack, cron, sendmail, mh, Recipes, brl-gw, isode, pcip, pctelnet.
Price : DFl 120,-/180,-

EUUGD13: The latest conference tape for the London EUUG 1988 spring conference tape. It contains things like: cake, chat, config, copytape, graphedit, kermit, little-st, mcc, mstools, news, pd-diff, pdtar, perl, postscript, psfig, pshalf, shar, rpc, moria4.85, omega, arc, backup, smail, sush, watcher, and much, much more.

Price : DFl 120,-/180,-

EUUGD14: -> NOW A NEW VERSION <-
This is version 5.0 of this non-proprietary implementation of some of the OSI parallel protocols suites as defined by the International Organisation for Standardisation (ISO), the International Telegraph and Telephone Consultative Committee (CCITT), and the European Computer Manufacturer's Association (ECMA).

This release is coded entirely in C, and is known to run under the following operating system without kernel modifications:

BSD 4.2 and 4.3
Ultrix
AT&T UNIX SVR2 and SVR3
AIX
HP-UX
ROS
Pyramid OsX

Since a Berkeley UNIX system is the primary development platform for ISODE, the documentation and source are somewhat slanted towards that environment. The tape contains some 12Mb of both tools and documentation in machine readable form. EUUG will send you a tape only.
Price: DFl 120,-/150,-

If you want the complete documentation on paper (some 800 pages!) with the tape, you will have to order this distribution as follows:

Send a cheque or a purchase order for 200 Pounds Sterling to:

Department of Computer Science
Attn: Soren Sorensen
University College
Gower Street
London, WC1E 6BT
United Kingdom
Telephone: +44 1 387 7050, extension: 3680

Specify either 1600 bpi 1/2-inch reel tape, or sun 1/4-inch cartridge tape. The tape will be written with tar format and returned with a documentation set via DHL. Do not send tapes or envelopes. Documentation only is the same price.

EUUGD15: Here it is! The X11 Windowing system material, release 3: X11R3 This is one tape, containing the entire distribution from MIT in compressed format. Uncompressed this is some 87 Megabytes. This includes the core system, as well as much user contributed software.
Price : DFl 120,-/180,-

EUUGD16: This is the Brussels EUUG 1989 spring conference tape, and consists entirely of software from the GNU project from the Free Software Foundation (not to be confused with the OSF :-).
On this tape you will find: ispell, g++1.31, awk, gcc-1.33, gdb-3.1, Cscheme, emacs, lisp-manual, libg++1.32, binutils, bison, ghostscript, gas-dist, gawk2.02, gnews2.0, gnuchess, make3.27, oops-2.2, pace, ps-emacs, scheme, sed-1.01, tar-1.04 and torture.
Price : DFl 120,-/180,-

EUUGD17: This tape contains the software for ET++. >From the abstract of the "Autumn 1988 EUUG Conference Proceedings":
"ET++ is an object-oriented application framework implemented in C++ for a UNIX environment and conventional window system. The architecture of ET++ is based on MacAPP and integrates a rich collection of user interface building blocks as well as basic data structures to form a homogeneous and extensible system."
It totals some 18Mb of software that the people of the Institut fuer Informatik of the University of Zurich were so kind to let us, mere mortal souls, play with. Have fun.
Price: DFl 120,-/180,-

EUUG Software Distributions Order Form

If you want to order any tape, please write to:

EUUG Software Distributions
c/o Frank Kuiper
Centrum voor Wiskunde en Informatica
Kruislaan 413
1098 SJ Amsterdam
The Netherlands

For information only:

Tel: +31 20 5924121 (or: +31 20 5929333)
Facsimile: +31 20 5924199
Telex: 12571 mactr nl
Internet: euug-tapes

Please note that for distributions D1, D2 and D4 (and in some cases also for D8) a copy of your source licence agreement with AT&T for at least UNIX version 7 should be enclosed. Note also that you have to be an EUUG member (or a member of a national UUG) to obtain tapes at list prices. Non-members will have to pay HFl 300,- per tape extra as handling fee. Please enclose a copy of your membership or contribution payment form when ordering. Do not send any money or cheques, you will be invoiced.

All reel tapes come in tar format, 1600 bpi. 800 bpi is possible on request. Cartridge tapes come in tar format, written with dd, with a blocking of 126b. This is a so-called QIC-24 format, written on a Sun. QIC-11 is available on request.

This page may be photocopied for use.

Name: .....

Address: .....

.....

.....

I would like to order the following:

.....

.....

.....

EUUG (or national UUG) membership form enclosed? Yes / No
Copy of AT&T source licence enclosed? Yes / No

"I declare to indemnify the European UNIX systems User Group for any liability concerning the rights to this software, and I accept that EUUG takes no responsibilities concerning the contents and proper function of the software."

Signature: .....

Date: .....

Puzzle Corner

Mick Farmer
mick@cs.bbk.ac.uk

Hi peeps,

Solution to Puzzle Number 4

Lack of space prevents me giving a full analysis of the answer. However, here's a summary. First, Bashful and Sleepy are not implicated in the house building exercise, so we assume they did not part. Second, the question refers to two groups the first containing Grumpy and the wearer of the blue scarf; the second containing Happy, the wearer of the white scarf, and another. From these and the other facts we deduce that the order of walking is:

Doc wearing the blue scarf carrying the saw (Grumpy).
Sneezy wearing the white scarf (Doc).
Dopey wearing the green scarf carrying the twine (Happy).
Happy wearing the red scarf carrying the hammer (Dopey).
Grumpy (Happy).

The names in parentheses are the names suggested so Happy, suggested by No. 3 and No. 5, was made to go back for the nails.

Puzzle Number 5

This puzzle has to be set in the past as today's digital clocks are too accurate!

On Friday, 1st April 1898 three new clocks were set going at the same time — twelve noon. At noon on the following day it was found that clock A had kept perfect time, clock B had gained exactly one minute, and clock C had lost exactly one minute. If all three clocks maintain the same rates of progress without stopping, when would all three pairs of hands again point at the same moment at twelve o'clock?

Puzzle Number 6

This is a fairly simple problem for those of you who understand the finer points of C and Pascal.

Write a program that will compile without errors in both C and Pascal. After the C compilation the program should output the message `"Hello Dennis!"`. After the Pascal compilation the program should output the message `"Hello Niklaus!"`. To find the solution you will need to consider how to invoke your C compiler!

Puzzle Number 7

This problem causes much hair pulling and wailing if tackled the wrong way.

Write a *self-replicating* C program, i.e. one that outputs an exact copy of itself. It should be self-contained, not reference any external files and, of course, be portable. The wrong approach is to think that you need a statement:

```
printf("int main(void)");
```

This means you also need a statement:

```
printf("printf\"int main(void)\");");
```

This obviously leads to difficulties. Needless to say, the solution revolves around the representation of string quotes!

Keep those solutions flooding in.

Mick

Recent Developments in Screen Fonts

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This is the third article in the series on Window Systems.

The Windows Column this month looks at the techniques for displaying text on bitmap displays, looking in particular at three recent developments by Adobe, Sun and Apple.

Introduction

This article is about fonts: the word 'font' is used very loosely by the computer industry, so I will try to be precise about what I mean. For the purpose of this article a *font* is a collection of character shapes, number shapes, punctuation shapes, etc., in a particular style. For example, Times-Roman and Times-Italic are both fonts. The character shapes in different fonts may be closely related, for example Times-Roman and Times-Bold, and a collection of related fonts is called a Font Family. Having defined my terms, consider the actual mechanisms used to make marks on paper or on the screen.

Traditional printing using moveable type involved assembling the correct sequence of pieces of metal, each marked with a character shape at a particular size. They would be in a particular font, but it is also necessary to know the size of the character in order to choose the right piece of type. Thus a printer would have large trays, each containing the pieces of type for a particular font at a particular size, e.g., Times-Roman 12 point. The size is given in a unit called *points* where 1 point is one 72nd of an inch: the '12 point' designation doesn't refer to individual characters but gives a general indication of the size with all of the character shapes scaled to fit. As a further complexity, the character shape may be changed at very small sizes to improve readability, which somewhat upsets the meaning of 'font' given above.

In more modern, photographic methods of printing, the letter shapes are made on film and can be enlarged or reduced photographically: in this case the film contains a single font such as Times-Roman and the size of the letters is controlled by adjusting the lenses used to focus the image of the letter shape onto photographic paper.

Bitmap Fonts

Most current systems with bitmap displays use *bitmap fonts*, the equivalent of moveable type. A bitmap font contains the character shapes as patterns of 1s and 0s, but only for a fixed size, e.g., 12 points, and then assuming a fixed size for

the pixels on the output device. Hence the Macintosh comes with bitmap fonts such as Times-Roman 12 point at 75 dots per inch. Bitmaps fonts are applicable to any pixel-based output device, including modern phototypesetters such as the Linotronic 300, but the amount of storage needed to hold all of the character shapes at all of the likely sizes is very large: the TEX Computer Modern Roman font for use at the 1270 dpi resolution of a Linotronic phototypesetter occupies 30 Kbytes just for the 12 point font.

The major virtue of bitmapped fonts is that they are very fast to use. Printing a character involves performing a rasterop using the character bitmap as a mask for the pen colour (which could itself be a bitmap pattern such a halftone). This kind of operation is fundamental to bitmapped display systems and tends to be highly tuned. It is also a very versatile technique because the mask can be used in different ways; as a cursor for example.

Bitmap font technology is still being advanced: on greylevel or colour screens where each pixel can display several shades of grey, the appearance of fonts can be improved by using *anti-aliasing*, essentially a way of using grey levels to fool the human eye into seeing details smaller than 1 pixel wide. The Macintosh can use antialiased fonts, and the NeXT machine from Steven Jobs uses a 2-bit graphics screen (i.e., black, white, 30% grey or 60% grey for each pixel) to achieve a marked improvement in readability.

The major limitation of bitmapped fonts is that they cannot be used satisfactorily at anything other than their intended size and orientation. Many systems will scale a bitmap, for example producing a 24 point font from a 12 point one by turning each pixel into a square of 4 pixels, but the results usually look jagged and unpleasant.

Outline Fonts

An *outline font* is the computer equivalent of the photographic font: it describes each character shape as a geometrically defined outline which can be drawn on the output device and 'coloured in' to produce the desired character shape at whatever size and orientation is required. In practice it is very common to use a letter shape more than once, so all outline font systems use a mechanism called a *font cache* which behaves in a similar fashion to the UNIX disk block cache. When a character is required at a particular size and orientation from a particular font, the font cache is searched to see it has been previously cached. If not, the outline font description is used to generate a bitmap for the character (a process known as *scan conversion*) and the result is saved in the font cache. The character is then printed from the font cache, just as though it was a character in a bitmap font. The next time that character is required, with luck it will be found in the cache and so avoid re-conversion. Font caches tend to be managed using a Least Recently Used algorithm, and with size limits to prevent a very large character from wantonly destroying a lot of small cached bitmaps. The scan conversion process is thus separated from the bitmap font mechanism and so an outline font can easily be added to an existing system with bitmap fonts.

The snag with outline fonts is that typical screens have very few dots per inch and so typical character sizes don't offer a lot of pixels to work with. A typical 10 point screen font has to construct a readable character shape in an area of about 10x10 pixels, so most screen fonts are 'hand tuned bitmaps' to make them readable. To overcome this problem, outline font character descriptions include *font hints* which are instructions about how to modify the character shape so that it fits well onto a coarse pixel grid.

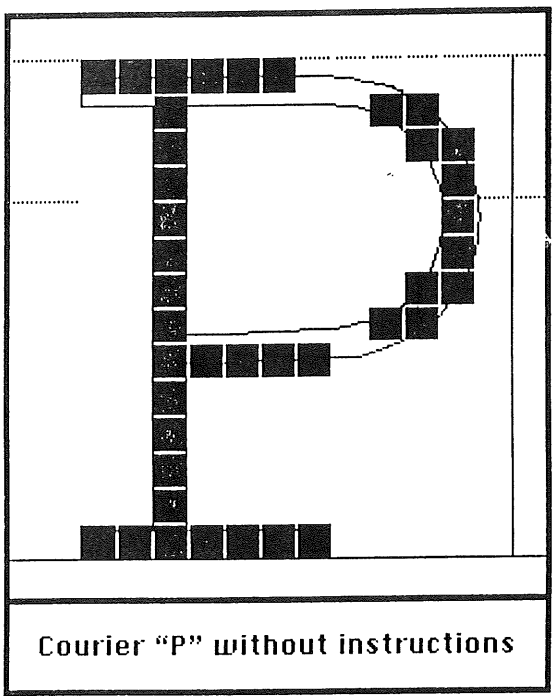

Figure 1

Figure 1 shows a naive scan conversion of a Courier font letter P at an awkward grid size, Figures 2-4 show some of the intermediate steps in adjusting the character, and Figure 5 shows the scan conversion of the hinted P.

(These figures are taken from a Hypercard Stack produced by Apple Computer Inc. to preview their Outline Font technology, described below.)

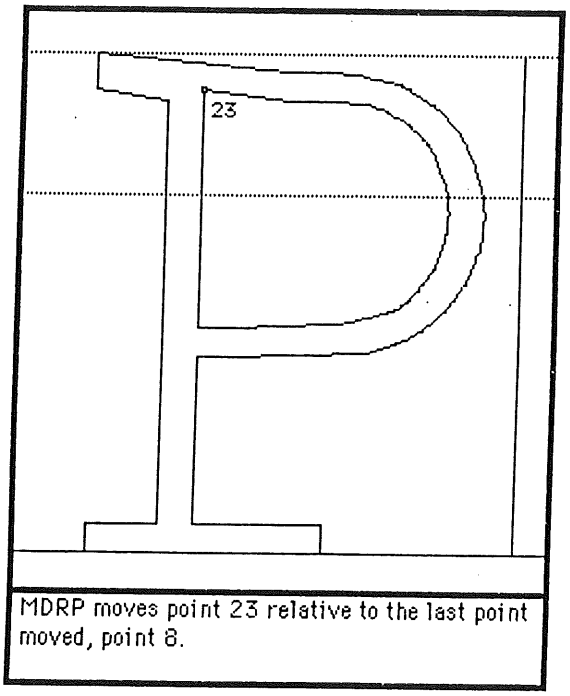

Figure 2

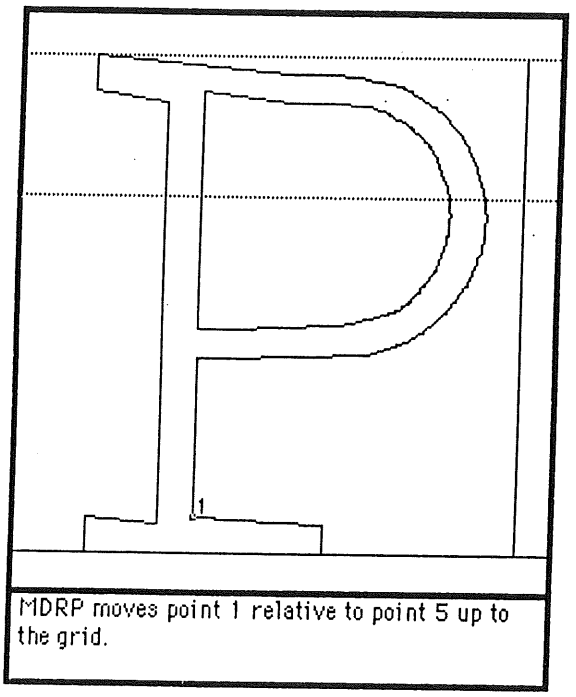

Figure 4

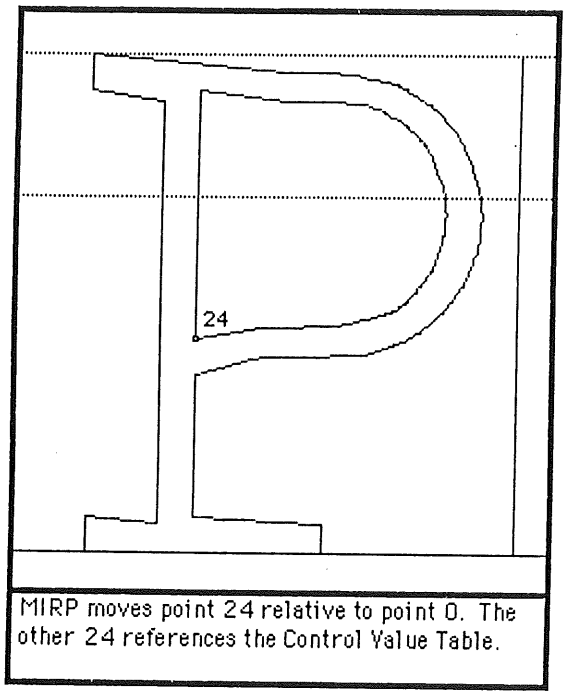

Figure 3

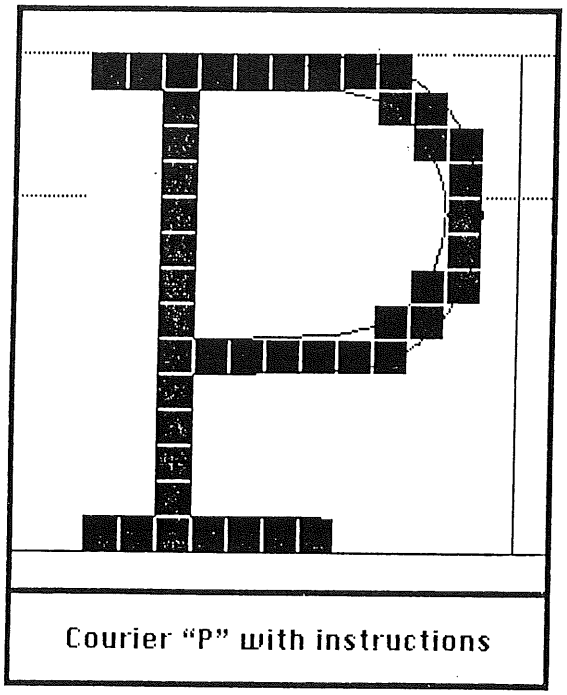

Figure 5

Part of the problem of hinting is to produce an efficient system which can give good looking results for a wide range of rotation angles and sizes, and which can be produced quickly and preferably automatically. For large numbers of dots, such as the 1270 or 2540 dots per inch on the Linotronic, outline fonts don't have this problem, but it is still significant with say 6 point text on a 300 dot per inch laser printer.

Display PostScript

Display PostScript is a product from Adobe Systems Inc. which essentially provides a PostScript interpreter for use with screen displays. The outline fonts used are the same as for a PostScript printer, which means that the screen is an accurate page proof for the printer output and that user defined fonts can be produced. The Adobe fonts are not written directly in PostScript however, but operate at a slightly lower level and include a proprietary hinting mechanism; this works well for small point sizes on a 300 dot per inch printer, and Adobe evidently feel that their mechanism is good even for small fonts at typical screen resolutions. The NeXT machine uses Display PostScript and it has also been licenced to DEC, though 'licencing' Display PostScript doesn't include access to Adobe's proprietary source code: instead, Adobe supply a core compiled for your machine, plus source code which demonstrates how to use this core in a window system.

Sun OpenFont

OpenFont is a fairly recent announcement from Sun Microsystems, consisting of three parts. The central part is a published font description language complete with hints called the F3 format and the part used in the display system to carry out the scan conversion of F3 format fonts is called the font engine. Finally there is a large expert system which accepts font outlines in a variety of formats and semi-automatically works out the necessary hints and produces the F3 format font description. In common with Sun's philosophy on such things as NFS, both the font engine and the expert system can be licenced as source code. The font engine will be part of the combined X/NeWS server currently under beta test.

Apple Outline Font

The Apple Outline font mechanism is unusual in that it uses quadratic curves rather than cubic curves, but otherwise behaves much like the others. Apple have published full details of the language used to describe character shapes, including a comprehensive list of routines for adjusting the character shape at small sizes; apparently this language has a number of operations put in there at the request of specific font manufacturers, and its performance is impressive. Apple have given away a Hypercard stack which demonstrates the hinting language in action, and includes a 'Screen recording' of the outline fonts in action.

Until the release of System 7.0 for the Macintosh, which will include the Outline Font mechanism as standard, Apple have had to rely on PostScript in the Apple LaserWriter to provide font scaling, using bitmap fonts on screen and with dot-matrix printers. Now that they have the outline fonts, the same font descriptions can be used to produce high-quality text for any pixel-based device, including cheaper laser printers, dot-matrix printers and even FAX modems. To make use of this, they have also announced a substantial revision of the way in which Macintosh printing is organised.

The outline font and printer changes would be significant by themselves, but there is a third component in the Apple announcements that will bring the two together and re-assert Apple's technical superiority in the desktop publishing and presentation markets. The *Line Layout Manager* transparently provides high quality typesetting to any Mac application at the same time as making it easier to program WYSIWYG applications. The difficulties with using an unusual point size such as 21 point is that character widths are typically not whole numbers of screen pixels. Any program which wants to do things properly has to do all of the sums associated with this and has to worry about subtleties such as kerning (where letters are moved relative to one another for aesthetic reasons) and ligatures (where letter shapes combine). These problems are even worse in non-European languages because the rules for kerning and ligatures are more complicated. The Line Layout Manager does all that; a program will simply ask for 'The office door is locked' to be displayed, and the line layout manager will deal with ligatures such as the 'offi' combination and so on. Applications can also ask which character the cursor is pointing to, ask for a range of characters to be highlighted and so on.

The Line Layout Manager uses information stored with the outline font to get closer to the original intentions of the type designer. For example, the Zapf-Chancery MediumItalic font available as a PostScript font is not a full version of Zapf's original design, but the Line Layout Manager will put in the missing subtleties: the 'e' of 'office door' should have an extending flourish on the horizontal cross-piece, and the Line Layout Manager will put that in as soon as it knows that the 'e' is followed by a space (think of it as an e-space ligature). All of this works in multiple fonts and multiple languages as well, though understanding the implications of the rules when trying to select a range of characters in a mixed Arabic-English-Chinese text is likely to be very difficult!

Conclusions

The inclusion of outline fonts in X/NeWS and the re-assertion of Apple's leadership in desktop publishing and presentation both make it very likely that we will all be using outline fonts in a few years time (except those of you still using KSR-33 teletypes...). The principal benefit will be that the screen display is just another approximation to desired image, in the same way that different PostScript printers just produce more or less accuracy in rendering of the desired image, so applications will not have to juggle two separate representations in search of the Holy Grail called WYSIWYG.

Design and Implementation of 4.3BSD—Book Review

The Design and Implementation of the 4.3BSD UNIX Operating System, Samuel J. Leffler, Marshall Kirk McKusick, Michael J. Karels, John S. Quarterman, Addison-Wesley Publishing Company, 1989, ISBN 0-201-06196-1. (UK) Price £31.95, Hard Back, 417 Pages pp.
Reviewed by Dan Debrunner of UniSoft Limited, *dan@root.co.uk*.

As the title suggests this book provides a deep insight into the UNIX operating system developed at the University of California at Berkeley. The concentration is on the 4.3BSD release running on the VAX, though this should not stop users of other architectures reading it, especially those running ported 4.3BSD code and facilities, the VAX is used more as an example, in such a way that the generic methodology is clear. With the exception of a chapter on the issues in system startup, shutdown and configuration, it concentrates on the UNIX system from the system call level downwards. Thus it is aimed at people who have some understanding of UNIX and UNIX programming. Anyone who is serious about using UNIX for programming (applications or systems) should be reading it to find the best way to utilise UNIX while others may like to peruse it just to find out exactly what is the *kernel* that everyone talks about.

The book is split into five parts, the first section provides a history of the evolution and design goals of BSD right up to the latest *4.3 BSD Tahoe* release followed by chapters on the the overall design of, and services provided by 4.3 BSD. Each of the following four parts is dedicated to a particular area of the system (Processes, I/O System, Interprocess Communication, and System Operation) in great detail. Although the level of detail is high, such as the structure of a memory management page table entry (`struct pte`), the reader is led to it logically and clearly from the overall concepts at the beginning. The text is aided by good diagrams and tables, including pseudocode and brief extracts from the source code.

Every chapter is well structured with each section following on from, and building on the last section. The reference section at the end of the chapter is preceded by the exercises, most of these are intended to be thought provoking rather than just picking answers out of the previous pages. To confidently discuss the issues raised and answer the questions requires full comprehension of the chapter rather than a quick skim.

The book is completed by a glossary with all the *buzzwords* that abound in conversations between UNIX wizards.

I found the book easy to read and very informative, a new concept is always explained before it is used, each section follows naturally from the previous one, and a diagram is usually referenced in the text at just the point where the reader thinks that one is needed. I would recommend it to anyone involved in the technical side of computing, and especially all users of UNIX systems, whatever variants.

With the imminent release of System V Release 4 this book does not lose its value to the computing community, but rather increases it, as it provides design and technical information about features now in V.4 that were taken directly from 4.3BSD. It should provide the ideal companion to M.J. Bach's *The Design of the UNIX Operating System* [System V] that you probably already have on your bookshelf.

Glossary

There are approximately 8000 different words in this Newsletter. Here are the definitions of some of the not-so-common ones. Where a word has several meanings, the way that it is used in this issue is the one that is explained.

acclaim	acknowledge publicly the excellence of ...
accord	grant, give or bestow
acronym	EUUG is an acronym for European UNIX systems User Group
adequate	good enough
anecdote	story – to illustrate a point
ardent	expressive, passionate
browse	look though
burgeoning	growing, developing
chat	talk idly
cobble	put (together) in haphazard manner
coined	invent a new expression
convene	bring together
converge	come together, remove differences
depict	show
desire	want
elapse	pass – particularily used with time
embarked	set out
excerpts	extracts, bits of
forum	meeting place
glyphs	carvings – often on stone
haste	speed of action
homonym	words spelt the same but with different meaning
imprudent	unwise, not thought through
indemnify	protect/guarantee against ...
mutter	talk quietly or to oneself
omission	something missed out or forgotten
omnipotent	all powerful
panacea	cure for all ills
peruse	look though – browse
provoke	cause (thought or new idea)
snitch	an informer – to teacher at school
vague	not completely defined
viz	namely, used to list items. Short for videlicet

Abstracts

Here are the abstracts of the papers delivered at the EUUG Srping conference held in Brussels this year.

Copies of the proceedings are available from Owles Hall at £20 each including post and packing (there is an order form elsewhere in this newsletter).

Thanks are due to Stuart McRoberts <*sm@ic.doc.ac.uk*> who organised the typesetting.

UNIX and Load Balancing: a Survey

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The paper presents a survey of load balancing schemes and their application or applicability to distributed UNIX systems. It aims to provide a guided tour through some important concepts and ideas in this area, together with examples of complete or partial implementations. Relevance to UNIX is stressed, even though some of the systems under consideration have little relation to UNIX proper.

Amoeba – High Performance Distributed Computing

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The Amoeba Project is a distributed project on distributed operating systems. The project, which started in 1980 is now a joint project of CWI and Vrije Universiteit in Amsterdam and Cambridge University in the UK. About a dozen people are working on the project, led by Prof. Dr. A. S. Tanenbaum (VU), Prof. R. M. Needham (Cambridge) and the author (CWI).

Implementation of an Event Distribution Mechanism (EDM) on a Network of Workstations

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This paper describes an event handling mechanism for distributed systems. Processes, which are distributed over a network of nodes, can then communicate easily by means of events which may be sent over the network. The notion of a 'blocking event' serves as a means to synchronize the distributed processes. An implementation of the event distribution mechanism on a network of Sun workstations using Apollo's NCS is described. Finally some applications of the EDM are briefly mentioned.

Recent Changes in North American Computer Networks

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This paper gives an overview of developments in computer networks in North America since the publication of 'Notable Computer Networks' (NCN) in October 1986 [Quarterman and Hoskins, 1986]. Much of the material was discovered during research for a book [Quarterman, 1989]. Although some of the figures are closely related to ones in the book, none of the text of this paper appears in the book.

The EDUNET Project

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This paper describes the EDUNET Unix and IBM-PC network. The aim was to produce a modular network that allowed frequent changes in configuration.

Extending User Interface Toolkits for Picture Processing

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The name toolkit is a good description of both its purpose and what it provides. The toolkit builder provides the objects or widgets or tool-pieces to fit the types of interfaces that the toolkit builder imagines the toolkit will be used to build. Thus not all applications can be served by a given toolkit. As an analogy, a mechanic's, or electrician's toolkit provides the tools for their trades but could not reasonably be used to build a dining room table, at least not a table that would resemble that which could be made using a cabinet maker's toolkit.

User interface toolkits exist for most of the available windowing systems, e.g., X Window System, Andrew, etc. The contents of these toolkits do not always provide suitable tools for all applications. In the first part of this paper we examine the contents of the toolkits distributed with the X Window System for use in building a user interface to a Picture Editing system. In the second part of this paper we describe the development of tools for these operations and how they can be incorporated within the existing toolkits for use in future application.

The user interface requirements of a picture editing system are described, these are compared with the facilities provided by the main toolkit distributed with X/11 release 3. This provides the basic tools but does not include tools to support picture operations like region defines that require mouse input. The implementation of a track widget to provide this function for the X toolkit is described.

The Design of a UNIX Workstation Environment for Medical Image Processing

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We are building a medical image processing environment, based on general purpose UNIX workstations. These workstations are integrated in a heterogeneous network, which allows resource sharing and communication. To promote modularity and extensibility, the environment is based on a hierarchy of modules. These building blocks are loosely modeled after Smalltalk-80 classes. At the application level an interactive image processing tool has been created, which is manipulated through a graphical user interface. C++ is used as an implementation language. To complement the object oriented constructs of C++, we implemented a garbage collector, for managing complex dynamic data structures.

Occursus Cum Novo – Realistic Movies rendered in an UNIX-Environment

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The goal of the project **Occursus Cum Novo** was to generate a complex photo-realistic animation of nontrivial length in reasonable time at reasonable cost. Photographic realism comprises complex geometric models as well as the implementation of several optical effects. Both can be achieved by simulation. Simulations guaranteeing high quality, as ray tracing does for rendering, are known to be very time consuming. The film has a length of 5 minutes and was done entirely on a network of about 30 UNIX work-stations of type SUN-3. The organising scheme is described. Processing is done automatically in such a manner that it does not interfere with interactive users. The results of the project are of general interest since they show a way leading to efficient high quality photo-realistic animation synthesis in the future.

Designing A Virtual Toolkit for Portability Between Window Systems

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Today's application developers wishing to take advantage of modern graphical windowing technology are faced with the difficult decision of which platform(s) to develop their application for. While all of the popular window systems support certain basic functionality (windows, events, menus, mice, ...), the implementations vary widely.

The Extensible Virtual Toolkit (XVT) is a high-level interface that allows graphical, interactive applications to be easily ported to various window systems, such as X-11, MS-Windows, OS/2 Presentation Manager, and the Macintosh. Behind the common interface there is a separate implementation in the form of a C object library for each host system.

This paper describes the design principles behind XVT and its key programming features. It then reviews the main problems in creating an implementation for X and explains our short-term solutions. Also discussed are plans for more thorough long-term solutions using industry-standard toolkits.

Transport Interfaces in SINIX Systems

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Open systems and Open System Interconnection represent a major advance with mutual benefits for the software vendors, the system suppliers and the end user community. Modern design of open systems in information technology follows closely the Reference Model of Open Systems Interconnection as defined by the International Standards Organisation. In this model, the interface between layers 4 and 5 provides abstract transport service that is independent of the details of the underlying network implementation. Application programs access the transport service through an application programming interface. It is a most important aspect for writing portable higher-layer or end-user software intended to work across different networks as well as on various machines.

The X/Open transport interface XTI is defined to meet this requirement. It provides support for international and industry standards of transport services in UNIX systems. Using XTI, communication applications achieve the necessary

independence from the application environment and the underlying networks.

This paper discusses the XTI implementation in SIEMENS' SINIX system.

Implementing Internet Protocols on a small UNIX System

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The authors have designed and implemented networking software implementing the TCP/IP protocol suite for a small system running XENIX. A library emulating BSD sockets is also provided, as the systems are integrated in a network of workstations and minicomputers.

The paper describes the most important design issues and their consequences. Although we chose for simplicity and a layered structure, measurements show an acceptable performance.

Striping Network Device Driver for TCP/IP

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This document describes a project to design a UNIX network device driver that uses multiple paths across a network. The goal of this project is to increase the performance of the network between a Cray-II supercomputer and an Amdahl 5880 mainframe. Both systems run a version of UNIX with TCP/IP. Remaining interoperable with other hosts on the network is a chief concern; therefore, modifying the TCP/IP software is not a viable alternative. The network medium being used between these systems is the Network Systems Corporation (NSC) HYPERchannel.

The limiting factor in the speed of this network is the speed of the IBM-compatible channels on the Amdahl. The HYPERchannel is rated at 48 Mbits per second, however we are unable to take full advantage of this speed because the channel connections on the Amdahl are rated at only 1.5 Mbytes (12 Mbits) per second. This 1.5 Mbyte limit makes it impossible to use the full bandwidth of the HYPERchannel. To circumvent this limit, a striping driver that will simultaneously direct traffic over multiple paths to multiple HYPERchannel addresses is proposed. In order to accomplish this striping, one IP address must map to multiple HYPERchannel addresses. However, in order to adhere to IP standards, a one-to-one mapping of IP address to network interface is maintained.

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More Haste, Less Speed

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In the good old days, six years ago, I was teaching at the Universiteit van Amsterdam and sharing a 1MIPS, 4Meg machine with up to 60 other users. At times, it was irritatingly slow. Now, I have a 1.5MIPS, 4Meg machine all to myself, and at times it's irritatingly slow. Where did all the extra power go? Are we doomed always to be frustrated at the performance of our UNIX systems? What can we do to improve the performance of the systems we use and the code we write?

Authentication in a UNIX Network Using Smart Cards

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The security of the UNIX login mechanism has been found to be satisfactory for individual systems. Implementations of remote logins for a network of UNIX systems have been less satisfactory. A system that improves the security for remote login has been developed based on the use of intelligent or smart cards. This paper presents an extension to the mechanism developed that allows the card to be used for authentication by application programs.

First the operation of the login authentication system is reviewed, then an analysis of the possible extensions and problems are discussed. Finally a detailed description of an experimental implementation of a card based authentication system is presented.

The system developed stores the credentials for a user within the smart card, these are accessed by an extension to the UNIX login mechanism, this is used for both local and remote access. Then a communications path is established between the card and the user's login shell. This shell verifies each command with the card and then executes the command which inherits the communications path to the card for its own use.

Into the Padded Cell

S. J. Hinde, D. Colman, A. McPherson, A. P. Standford,

Information Technology plc, UK

Information Technology plc produce secure UNIX products for the military and commercial markets. The secure development team reveal some of their experiences in securing UNIX

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systems.

Following the principle that the highest fences of the protective measures should be placed at the outer defensive limits, the most obvious and cost effective method of reducing the threat to system security is to strengthen the UNIX login process.

Once users are accepted by the system, a strict 'need-to-know' principle is enforced. Users are only permitted access to information required for their work. Users are compartmentalised in a 'cell' of information. A user attempting to infringe the system security is isolated by the system into a 'padded cell', without privilege or access to useful information. Coupled with the requirements for enforcing a security policy is a need to monitor the action of the users – particularly as regards security sensitive events. An audit capability allows this form of surveillance to be achieved.

In standard UNIX, the system is managed by a single omnipotent superuser. Attacks using superuser privilege are potentially the biggest threat to the security of a UNIX system. This privilege can be sensibly partitioned between users of lesser privilege, greatly reducing the risk.

UNIX Standardisation: An Overview

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A short history of UNIX standardisation is given here together with an assessment of the current state of affairs vis a vis UNIX standardisation. An outline of future developments of the UNIX related standards is given; and some general trends in standardisation are discussed with respect to the development of UNIX standards.

The Next Generation of UNIX System V

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This presentation describes some of the features of the forthcoming release of Unix System V.4.0. A brief review of the entire computer market first sets the scene for the objectives which lead to System V.4, this includes comments on standards, real-time support, internationalisation, and ABI.

Current Research by The Computer Systems Research Group of Berkeley

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The release of 4.3BSD in April of 1986 addressed many of the performance problems and unfinished interfaces present in 4.2BSD [Leffler84] [McKusick85]. The Computer Systems Research Group at Berkeley has now embarked on a new development phase to update other major components of the system, as well as to offer new functionality. There are five major ongoing projects. The first is to develop an OSI network protocol suite and to integrate existing ISO applications into Berkeley UNIX. The second is to develop and support an interface compliant with the P1003.1 POSIX standard recently approved by the IEEE. The third is to refine the TCP/IP networking to improve its performance and limit congestion on slow and/or lossy networks. The fourth is to provide a standard interface to file systems so that multiple local and remote file systems can be supported, much as multiple networking protocols are supported by 4.3BSD. The fifth is to evaluate alternate access control mechanisms and audit the existing security features of the system, particularly with respect to network services. Other areas of work include multi-architecture support, a general purpose kernel memory allocator, disk labels, and extensions to the 4.2BSD fast filesystem.

We are planning to finish implementation prototypes for each of the five main areas of work over the next year, and provide an informal test release sometime next year for interested developers. After incorporating feedback and refinements from the testers, they will appear in the next full Berkeley release, which is typically made about a year after the test release.

Guidelines for an Informatics Architecture

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As a user of the information technology (IT) for its own administration the Commission of the European Communities (CEC) has been – as it has to be – a forerunner and an example in applying a procurement policy based on standards. The CEC adopted this policy in 1980.

In order to share its experience with other customers, the IT industry and the standard-making bodies, the CEC is publishing this third edition of its guidelines for the implementation of a vendor-independent architecture.

These guidelines will be revised regularly to respond to changes in the market place. Since the first edition in February 1985, there has been considerable progress in the area of standardisation and a significant shift among major customers towards adopting standardised products.

This edition incorporates further developments to the architecture with a particular emphasis on simplicity, economy, timing and end-user services. Options left open for the future in the last edition have now been settled: inter-institutional cooperation (INSIS and CADDIA), ISDN, LAN, cabling, addressing, security, interactive communication, file transfer, applications architecture. Parts of the previous edition have been rewritten, without however changing the substance.

The next edition of these guidelines will concentrate on applications architecture. The Commission of the European Communities would be grateful to receive information and suggestions.

Creation of an Open Systems Market: The rôle of X/Open in the practical establishment of open system standards

John Totman

Director of European Programmes,
X/Open Company Limited.

This paper outlines X/Open's Rôle in providing an industry standard, it's current status and future directions.

The Open Software Foundation's Open Process and the End User

Henning Oldenburg

Open Software Foundation

The Open Software Foundation has passed a major test of credibility with its recent selection of user interface technologies, announced to OSF members December 30, 1988, and presented to industry, press and consultants January 11, 1989 in the US and January 13 in Frankfurt, West Germany.

The importance of the announcement of a User Environment Component, OSF/Motif, goes beyond the adoption of technologies. Of equal significance is the way in which OSF selected the technology, and the implications of OSF's 'open process' for the industry and its end users.

NFS refreshes the filesystem(s) A/UX cannot reach

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A/UX, the Apple Macintosh version of UNIX, coexists alongside the original MacOS operating system: separate partitions on the same disk with little real connection between the two. The potential for running MacOS applications under A/UX lead us to develop A/UX software which provides access to the MacOS files using standard UNIX file handling. This paper describes the A/UX environment and the techniques we used: a first version based on a library to simulate UNIX file system calls and the later version using the NFS protocol to mount the MacOS partition as a UNIX filestore. We offer some reflections on the problems and successes of our work and suggest a number of things which may help those providing NFS servers for other 'exotic' filestores.

A Contiguous High Performance File System

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Recently the UNIX operating system is ported to various machines, and in proportion to its expanse, UNIX's application area grows. One of its typical new applications is an operating system for multi-media workstations. In this application, UNIX must efficiently handle huge amounts of data, such as for images and video. According to the media properties, some media must be accessed in real-time.

In this paper, first, the problems and limitations of UNIX System V manipulating these huge data files are discussed. It is concluded that the best way to solve these problems is to support a contiguous file system in UNIX. Second, implementation of a contiguous high-performance file system needing no modification of file access semantics is described. Third, the following two key technologies to increase the performance of HPF are proposed.

- High speed directory search
- High speed free space search

And last, the contiguous free space search performance of this file system from the result of a simulation is shown.

Dp: a System for Inter-Program Communication

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Dp is a system designed to facilitate communication between application programs. Originally intended to prototype a partial solution to the problem of the interconnection of highly interactive software modules, dp constitutes a high level interface to the standard UNIX Inter-Process Communications (IPC) facilities. The means by which one application may address another using dp are much simpler and more flexible than standard IPC. Integers, character strings and user-defined data may be communicated, in addition to byte streams. Dp was designed for the graphical workstation environment, and is as network transparent as the windowing systems alongside which it is used. Experience in building applications with dp has lead to additions and modifications to its facilities. The design and implementation of applications in which communications play a substantial part, require considerably less effort using dp than would otherwise be the case.

Memory Management Hardware: Panacea or Pain?

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In recent years computer manufacturers have flooded the bottom end of the market with a diverse range of low budget hardware. Although the processing power of these machines has steadily increased, such workstations are typically devoid of the expensive memory management hardware often found on larger machines.

This paper investigates the difficulties of supporting UNIX on such machines. It draws examples from two separate re-implementations of the MINIX operating system both of which support efficient, if not secure, UNIX-like processes without the aid of memory management hardware.

Mk'ing Hardware: A Tutorial

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Suppose we wish to build a piece of hardware, using wire-wrap technology. At the end of the design process, we will have a set of 'object' files, most likely a list of point-to-point wiring instructions for an automatic or semi-automatic wiring machine, and one or more files for configuring programmed array logic (PAL's). These 'object' files will be generated from a plethora of 'source' files, graphic as well as textual; the details depend on what programs are available. Mk is the natural tool to tie these programs together, and ensure that the computer always has an accurate representation of the physical state of the board as it is debugged and modifications are made. In contrast to the primordial make, mk allows meta-rules to be defined with regular expressions, and transitive closure is part of its semantics. Using examples from the UNIX Circuit Design System (UCDS), we show how these properties can be applied to construct a master mk 'library' that allows rules for individual designs to be specified compactly. Such a library also facilitates tracking of changes in the design system.

A Model-Based Diagnostic System for the UNIX Operating System

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The use of model-based reasoning techniques allows for the development of systems which describe the underlying structure of problems better than rule-based systems can. A model of the UNIX Operating System based on the filesystem structure is developed. Two applications of the model are described. The model is used as the basis of a program to help the user run filesystem checks on UNIX machines. It is also used to perform diagnostics, in particular to diagnose problems which occur during the boot procedure.

SCOOP: a Software Environment for C++ Object-Oriented Programming

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In this paper we describe a programming environment intended for those users of the C++ language who design programs according to a true object-oriented approach. First, we present the underlying principles of this approach which may be considered as a satisfying alternative to the conventional approaches. Next, we give a description of the main features of SCOOP, a tool developed by Intecs International. SCOOP allows the interactive design of the architecture and the coding of software built on top of the concepts of encapsulation and inheritance. It also provides automatic translation into Smalltalk and C++.

Step-by-step Transition from Dusty-deck FORTRAN to Object-Oriented Programming

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BRUGEL is a moderately large software for computer-assisted design of biological macromolecules. Its development began 10 years ago using standard FORTRAN-77 and continues to be based on that language. To overcome two major flaws of FORTRAN, viz. lack of expressive power and waste of the address space, we have developed a preprocessor and a dynamic memory management system featuring automatic memory reclamation, structured objects and error handling. The implementation of BRUGEL has evolved towards object-oriented programming by selecting from various programming languages which features were promising enough to warrant implementation as well as the recoding needed for their usage. Each such feature had to compete not only with other features but with the necessary priority accorded to implementation of new scientific methods in the software. This demonstrates, in a sense, the *inevitability* of object-oriented approaches.

Distributed Logic Programming

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M-VIP (Multiuser Vienna Integrated Prolog) is currently under development at the Technical University of Vienna. M-VIP extends standard sequential Prolog by multi-user capabilities. It enables the development of shared knowledge base systems fully integrated in workable UNIX environments. In this paper we present the language extensions of Prolog to allow the concurrent execution of Prolog queries, initiated by different users and its implementations.

Performance Evaluation: The SSBA at AFUU

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This is a progress report on the activities of the SSBA, the benchmarking group within the AFUU. The paper deals successively with the justifications and specifications, the alpha and beta testings, and the first customer shippings, of the

SSBA.

An Interactive UNIX Spelling Corrector

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When designing interactive information processing applications there are two important properties of the data files that must be considered. The first of these is the size of the file. The second is speed of access. An investigation was conducted into the most appropriate structures for the storage of dictionaries. Sequential, binary and hashing techniques proved to be inferior to tree-based methods which permitted data compression.

Tree structures for storing a dictionary file were used in writing an interactive spelling corrector because:

- tree-based storage methods were the only method to introduce data compression;
- access times were found to be better in comparison with the sequential search and comparable with binary chop or hashing; and
- it was discovered that there existed inherent spelling correction within the tree.

Context-Reflecting Pictures of a Database

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An experimentally implemented unusual database interface with a new idea of context managing mechanism is introduced to make multi-contextual data dialogues intersession resident and readily responsive to appropriate changes of the database. Dialogue contexts, called pictures, reflect the real data, so their universe is a complete information model (to be mapped to the database scheme). Moreover, pictures are the only means by which database access is brought about. A picture can be regarded as an entry form for typical data input, or a transient portion of information on something, or a detailed report on something to be kept safe, or a part of the database scheme from a given point of view, or a distinctive query specification, etc. Operations on contexts are not associated with traditional database subfunctions (insert, delete, update etc.) but are all interpreted on pictures and provide all subfunctions in one pattern.

A Simple Guide to Porting the X Window System

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The X Window System is the *de facto* graphics standard for UNIX workstations. The authors of the X Window System have gone to considerable lengths to allow it to be ported easily.

The server provided on the X distribution tape has some presumptions about the target system. The further from this model the harder it is to port X.

This paper only gives guidelines about how to port X by explaining where the major problems are and pointing to examples in the sources of code to act as a template for your own port. Only version 11 of X is discussed.

The author is a researcher in graphics interfaces. He has ported X release 10 to the Whitechapel MG-1 and HLH Orion and ported X release 11 to the HLH Orion 1/05 and has advised on other ports.

A.F.U.U News

Matthieu Caprile
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UNIX™ Research Centre
Bull S.A.

Matt is a night-owl programmer at Bull S.A., and has been for the last 3 years. His domain of predilection is internationalisation, and is involved in standards work. He participates in /usr/group and X/Open internationalisation work, and tries to implement between airplane trips. His latest personal project is implementing a programme to turn water into wine, but although the technique has existed for almost 2000 years, he is still having problems. One major difficulty is in converting the old cubit measurements into cubic centimeters. It is a frustrating project due to the limited success obtained so far, but after each two-hour session of quality assurance, (which involves comparing the results with some of the better French *vignobles*), he doesn't really mind (until he awakes the next morning).

Introduction

This article is a general overview of the A.F.U.U. First the upcoming future events are simply listed, and the rest of the paper deals with a subject that the A.F.U.U. considers fundamental: services to its members, and specifically the workshops (also called study groups) that we have been organising lately.

Future Events

Upcoming events in France over the next few months include:

Journees UNIX de Grenoble

25-27 Oct. 1989 in Grenoble exposition hall "Alpes Congrés". This is the second edition of the UNIX conferences and exposition in Grenoble. It is being co-organised by the A.F.U.U. and the regional developement board. Last year it was held in conjunction with the CONVENTION A.F.U.U. 88, and it was a big success. This year it will be twice as good: twice as many tutorials, twice as much exposition space. Contact BIRP Com.Tec : +33 1 4354 7567

CONVENTION A.F.U.U. '89

24 November 1989 at the new CNIT Paris la Défense. This is the traditional, annual A.F.U.U. meeting of members, which votes the budget, elects replacements to the governing board, etc. There are also workshops, and hopefully there will be the brand-new A.F.U.U. tee-shirts (if we can talk the price down).

CONVENTION UNIX '90

27-30 March 1990 at CNIT Paris la Défense. This is the A.F.U.U.'s annual trade-show and technical conference. There will be displays by most of the major manufacturers and software houses of their most recent products. It is also being held in the CNIT. This marks a big change for us: the floor space is almost twice as big as last year, and there will be more conferences. Also, and certainly not to be forgotten, this will be the year that the conference becomes European: several non-French technical presentations will be made, and almost all European UNIX computer manufacturers will be represented. contact: A.F.U.U. +33 4670 9590.

OTHER FRENCH CONFERENCES

- TELECOMEXPO 89. 19-22 Sept, Paris. The 2nd exposition for telecommunication professionals. contact: +33 1 4665 1115.
- EIFANS '89. 21-2 Sept, Caen. International forum on applications of new superconductor materials. Organised by EC2. Contact: +33 1 4780 7000.
- PIXIM 89. 25-29 Paris. A gala for image technology. Organised by BIRP. Contact +33 1 4742 2021.
- Workshop/conference on data-bases. 26-28 Sept. Geneva Organised by the French National Research Institute for Automata and Information sciences (INRIA). Contact: +33 1 3963 5600.
- INFORA 26-30 Sept. Lyon (Eurexpo showroom). Large exposition for office automation, Desktop Publishing, teletex, and office applications. Contact: +33 7222 3344
- AppleExpo 27-30 Sept Paris. Contact: +33 1 6928 0139
- Productique 2-6 Oct., Paris. Exposition dedicated to Robots and Industrial Automata. Organised by Sepic. Contact: +33 1 4039 1515
- Forum MOS 3-4 Oct., Paris. Forum dedicated to the MOS Operating System. Organised by Infologiciel +33 8844 9020
- HYPERCUBES 4-6 Oct. Rennes (Brittany). Internation conference on hypercubes and distributed/parallel processing. Organised by INRIA research institute. Contact: +33 1 3963 5600
- MICRO 89 9-13 Oct, Paris The big bang of micro-computers. Organised jointly by Sicob, Infomart and Capric. +33 1 4261 5242

SERVICES PROVIDED BY THE A.F.U.U.

As stated in the introduction, the A.F.U.U. feels very strongly about providing services to its users. It is an *association* of users, and exists to serve its members as much as possible. The rapid growth of the association attests to both the increased interest in UNIX, and the quality of service that the users receive. I will give a rapid description of some of the services we provide, with special emphasis on the study groups that we have organised.

NEWSLETTER

This is the traditional service offered by most of the European UNIX groups. But the newsletter has come a long way since its debut: from the original few stapled sheets, to its present 60 page glossy magazine. The newsletter, TRIBUNIX, is printed 6 times a year. The users are very happy with the quality of typesetting and of the articles. Articles include technical presentations (from descriptions of distributed operating systems techniques, to database structures and new product reviews), review of conferences in France, Europe, and the U.S., book reviews, a programmer's column, job offers and machines for sale, and updates on what the working groups have been doing recently. Thanks are due to Philippe DAX the chief editor, and the entire publication committee, for the excellent accomplishments of the last year.

The A.F.U.U. is considering starting a once-a-month flyer (one page news flash) to better inform the members about the important things that have happened during the month.

TAPES

The A.F.U.U. have been shipping public domain tapes for its users for quite awhile now. The types of tapes include archives of specific news groups (such as comp.sources.unix), the S.S.B.A. benchmarks, the FNET tape (everything to get started on e-mail), X-window-system from MIT, etc. The most popular form of media still seems to be 1/2" magnetic tapes, although there are a few 1/4" QIC-24 tapes requested occasionally.

LIBRARY

The A.F.U.U. has been building up an extensive library over the past few years, now having well over 1000 books. The books cover over 15 subjects, from Operating Systems to networking, databases to graphics. There are also the 20 or so weekly and monthly magazines and trade journals you would expect to find in a library. And of course, there are back issues of TRIBUNIX and EUUG newsletter. The materials are available either at the AFUU offices, to read there or check out, or loaned to members via surface mail. The loans are for a duration of 20 days, after which a late fee is charged and/or library privileges

revoked, depending on how overdue items are. Anyone caught photocopying books immediately loses library privileges.

WORKING GROUPS

The last 6 months have marked a great change in the working groups sponsored by A.F.U.U.: many new ones have been created, and I am finding it difficult to keep track of them! The working groups are formed by A.F.U.U. members to research, study, or just provide a forum for discussion of various aspects of today's "UNIX culture". They usually meet once a month in the A.F.U.U. offices, and any A.F.U.U. member is free to participate. Each group decides individually what its objectives are, and the best way to meet those objectives. Some work groups publish papers or information in TRIBUNIX, the A.F.U.U. journal, others invite presentations from vendors and researchers in their topic of interest, and others embark on ambitious projects, such as the Benchmarking group, which I will introduce first.

BENCHMARKS

The benchmarking group set as its goal to produce a standard benchmarking suite available to all. It recognised the need for such a suite due to the many different "versions" of benchmarking programs, such as dhrystone or whetstone. Not to mention the fact that some vendors modify "slightly" the benchmark to get better results. (some definitions of "slightly" include rewriting the inner loops of a program in assembly language!)

The group has worked hard for the past two years, and has produced a tape of benchmark programs, most of them standard, generally available benchmarks, and including configuration and output scripts. This collection is called the S.S.B.A. (*Suite Synthetique des Benchmarks de l'A.F.U.U.*). The S.S.B.A. tape is loaded onto the machine to be tested, the configuration file is set up (which contains such things as the name and type of the machine, compile time options, machine configuration, etc.), and the tester types "make". No modification of the source is allowed.

The A.F.U.U. has started a programme of "verifying proper running of the suite" to make the results more useful and believable. The process is simple. Anyone writes to the A.F.U.U., asking for a member of the benchmarking group to come and verify the correct running of the test. A person will visit the site, and after completion of the suite will provide the requester with a paper that certifies the proper execution of the benchmark suite. The paper does **NOT** serve as a definitive measure of the performance of the machine, only that the benchmarks were run as required by the suite. This includes such things as not modifying the code, and executing the entire suite without stopping and re-starting later (thus it is not possible to run the different tests with different configurations of the machine). Those who work with benchmarks understand that a number, or series of numbers, is not an absolute measure of machine performance. The certification only exists as proof that the tests were not modified or "improved" so that all the results from different machines were run using the exact, identical programs. The suite has been requested by the E.E.C. for use in evaluating machines.

The S.S.B.A. was presented at the last E.U.U.G. conference in Brussels, and readers who wish for more information can find them in the conference proceedings.

WORKSTATIONS

This working group is one of the oldest, having been created two years ago, at about the same time as the benchmark working group. Its purpose in life is to study, and discuss, all the aspects of "workstations", among others:

- what is a workstation? Depending on the user, this could mean a PC-AT with a graphics card, or a 30-MIPS 3-D super-station.
- Architecture of workstations. The pros and cons, what architecture speeds up what types of work. RISC, CISC, specialised graphics processors, memory hierarchies, etc.
- Different Operating Systems. UNIX, MACH, Andres, Athena, and more. To what extent are distributed services are available, including fully distributed operating systems such as Chorus®. Co-existence with MS-DOS® and cooperation of different operating systems.

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0. Chorus is a registered trademark of Chorus Systèmes.
0. MS-DOS is a registered trademark of Microsoft Corporation

- Compilers and Languages. Optimisation, development tools, CAI and CASE.
- Graphics capabilities, interfaces, and standards.
- Networking. Different protocols for information exchange, networking transparency, network administration.
- Desktop publishing and office automation using workstations.
- Real-time. Different approaches and models.
- Provide a forum for exchange of information on workstation products.
- Benchmarking. A tool to help measure some aspects of workstation and graphics performance.

And of course, the goal is to make as much information to A.F.U.U. members as possible, to help chase away the clouds of misinformation surrounding workstations. Many different products have been presented to the group, and this information has been passed on the members: from new CPU architectures, to fully distributed services. The group has made documentation on new products available, and organised conferences on graphics, workstations, standardisation efforts and new technologies. Special presentations have been organised for particular subjects, such as RISC technologies, compiler optimisation, X windows, GKS and PHIGS, as well as round-table discussions with different workstation manufacturers.

SECURITY

This group has two goals, and is divided into two "subgroups" (which generally have the same members) that have different goals. This first group's goal is to study security and secure systems in general. The second group concentrates on security in "standard" UNIX systems, and what can be done to make them more secure. This is also a study group on UNIX administration, and how to do secure system administration. The group has published a security "cook-book" to help administrators guard against attack. Also, Some papers have recently been published in TRIBUNIX to inform the user community, such as X.400 (March/April 89), a glossary of security terms (March/April 89), and *uucp* (May/June 89). Two more articles are almost ready to be published. Papers and transcripts are available at the A.F.U.U. offices. There have been discussions on utilities pertaining to security that have recently been posted to netnews, such as: *setuid*, *access*, *pwdiff*, *tallow*, and *diskhog2*. Future meetings will discuss, among other things, the *crash*, *cmpress*, *dcopy*, *ff*, *ncheck*, and *audit* programs.

NETWORKING GROUP

This working group discusses the evolution of the French UNIX network, FNET, which is the French part of EUNET. The group has published several papers (a few of which where available at the last E.U.U.G. conference) on *uucp* and *sendmail* installation and configuration, hints on how to find and solve problems, etc. Other goals include providing a forum for discussion of FNET and its services to A.F.U.U. members, help solve any problems that might arise, chose technical solutions, provide education to the A.F.U.U. community about FNET, and chose new directions for FNET, such as a connection to the InterNet, or high speed dedicated lines, or gateway service between protocols and/or networks. This group has been instrumental in making the FNET service a reliable, fast service. The group also discusses, and invites presentations on, different aspects of networking. Examples are NCS from Apollo, the ISO/DE implementation, and new directions in networking (such as fibre optic connections).

USER INTERFACE

Considering the multitude of User interfaces available to the user[1], Open Desktop, Motif, OpenLook, DecWindows, PM/X NeXTstep, Macintosh toolbox, and MS-Windows, it is easy to get lost in the world of bitmaps and mouse traps. The group would like to inform users on the different user interfaces available today, and to the different types of possible implementation bases, such as X-11 or Display PostScript[2].

1. I think that most of these are most likely trademarks or registered trademarks. Open Desktop, by the Santa Cruz Operation; Motif, by OSF; OpenLook, by AT&T and Sun (alphabetical order); DecWindows, by Digital Equipment Corporation; PM/X, by Hewlett-Packard and Microsoft; NeXTstep, by NeXT; Macintosh, by Apple; and MS-Windows, by Microsoft.
2. PostScript and Display PostScript are trademarks of Adobe.

The first meeting of this group took place June 7th, and consisted of a presentation of X-11 and working out a plan of how to proceed and the goals of the group. Future meetings will hopefully address the subjects of graphical quality, choice of fonts available, character size type and usage of icons in the different systems, how the mouse is (or can be) used, etc.

SCIENTIFIC COMPUTING

This could also be called the super-computing workshop, but the definition of what exactly defines a supercomputer is almost a religious subject. The first meeting of this working group took place the 27th of February, at the Framentec facility, hosted by Nhuan Doduc. There were 29 participants in this first workshop, which promises to be an active group. The reason for the formation of the group is the explosion of UNIX in the scientific number-crunching world. The goals of the group are three-fold:

1. to allow the members of the group a forum for discussion on new technology in this area and for presentation of new and/or interesting configurations.
2. to be a forum for exchange of view-points, experiences, and hard- and soft-ware solutions.
3. to be a forum for expression of what is needed in the area of scientific computing.

Possible topics are vectorisation in C, rapid I/O methods, Fortan 8X, and scheduling and load balancing. There was a presentation made by Mr. Fred Metry, of Astronautics Corporation of America, who presented their ZS supercomputer. There was an interest expressed by the group in the area of parallel computing, and there will be thought to either creating a separate parallel processing work group, or to including this subject in the areas of study of this group.

MAITRISE CULTURE UNIX

This workshop was formed in the beginning of last year, and its goal was to help distribute information about "the UNIX culture". Everything that you ever wanted to know about UNIX, but were afraid to ask your local guru. This group has published a series of documents and tutorials aimed at helping new users get started, as well as addressing more advanced topics for the experienced user. The group has since "split" into several other groups as the need arrived, the newest being the portability sub-group.

PORTABILITY

This new study group concentrates on portability, as you probably suspected. It met for the first time March 14th in the A.F.U.U. offices, and met again on April 14th. The main objective of the first work shop was to get to know one another and to define the objectives to work toward. The group split the idea of portability into 4 levels:

1. source code application portability
2. utility level, including standard tools, and databases, networking tools, etc.
3. OS interfaces, based on POSIX
4. hardware compatibility, such as Application Binary Interface (ABI)

The group would like to work in the area(s) between levels one and two, to place themselves between application programs and the standard utilities. They do not wish to do the same work as groups already established in the area, such as X/Open, but would rather use these as a basis on which to build. Since the most important thing when trying to accomplish something is to agree on what to accomplish, the group's first task will be to define what *they* mean by the terms *portability*, *compatibility*, and *migration* so as to not have confusion with what others mean with they use these terms. The existing documentation available to the different members was catalogued to give an idea of the work already accomplished in the area and to analyse what future work needs to be done. One of the first realisations of the group was that very often press articles, even in specialised computer magazines, are neither precise, complete, or correct. This reduces the amount of material available, and recommends caution when relying on information gleaned from the press. Only the most serious trade journals should be used, and even they should be verified with care. The work group decided to begin with the following publications:

- standardisation documents (such as the X/Open Portability Guide, and POSIX).
- work done or under study by national, European, or international standards organisations (such as AFNOR, DIN, ANSI, IEEE, CEN, ISO)

- specialised works (such as programming languages or databases)

The group would like to publish a study for information and comparison of what exists today to help portability in the UNIX environment. The deadline set by the work group is the CONVENTION A.F.U.U. 1990, but updates, or reports of the progress of the group should be available periodicly via TRIBUNIX, the A.F.U.U.'s newsletter. A series of informational presentations given to the group is planned. Among these are:

- AT&T SYSTEM V.4.0 (considering portability aspects)
- X/Open Portability Guide
- POSIX
- Programming Language portability (C, FORTRAN, COBOL)
- Shell program portability
- Portable backup methodology
- Portable, yet speaking the French (or other) language(s).
- networking
- databases (Oracle, Informix, Ingres, Unify)
- Sybase, Empress, Clio

DATABASES

The goals of this group are:

1. compare and categorise the different existing products
2. invite the different companies to present their products
3. conduct a poll of the different types of databases available, and make the results available to the membership
4. author a list of products on the market today that use databases.
5. follow new developments in databases and make that information available to A.F.U.U. members.
6. create a "press-book" containing clippings from newspapers concerning database technologies (this is available for consultation in the A.F.U.U. offices).
7. develop a database benchmark tape in the same spirit as the SSBA.

One of the first conclusions of the group was that they didn't use the same terminology to mean the same things! This lead to the writing of an explanation and definition of terms, in a very professional manner, which has been published in TRIBUNIX. The group has started in-depth studying of the different types of distributed systems and the advantages and dis-advantages of each. Many different products have been already presented to the work group, allowing a "census" of available technology (minutes and notes are available at the A.F.U.U. offices), Also, a teletex communication service (using the French minitel system) has been set up to allow dialogue and exchange of ideas.

Trailblazer and TCP/IP Services in Europe

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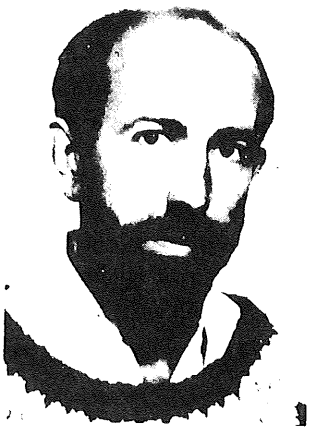

Peter Houlder has been in the Computing Laboratory at the University of Kent for the last 4 years and looked after day to day UKnet admin work in the last 3 years.

He graduated in Geography from Kings College, London in 1970 and then spent 9 years in business — dropping out in 1979. He then spent a year touring North, Central, South, and Carribean America, became interested in archaeology and spent three years exclavating in Britain and Europe.

Two Masters degrees, the first in Archaeological Sciences and the second in Computer Science, followed in successive years. Maggie in the meantime reduced archaeological funding, so he arrived in 1984 kicking and screaming into the world of Computing. He has since got to quite enjoy it.

He is married with two labradors.

There are two parts to this column: first a European Trailblazer & TCP/IP survey, and next a status report from Greece.

This article is hot from the press of the July 25th EUnet technical meeting. There may be some inaccuracies caused by the official Deadline for this article also being July 25th, so getting corrections from all the backbones in time is impossible. Anyway here goes .....

Until 1988 EUnet developed using public data networks and low speed modem connections. In the last 18 months two major developments have occurred in Europe.

1) In terms of modems, an increasingly large number of EUnet countries now have access to high speed Trailblazer modems using Packetised Ensemble Protocol (PEP), which can theoretically run up to 18000 bps, but typically run at at between 10000 and 13000 bps. UUCP rates up to 14000 bps are obtainable with the g-protocol. These modems can be set up to run at PEP-only and/or slower speeds, but assuming a 9600 bps rate is achieved, then data transmission typically improves eightfold. It should be stated that these modems can also run at 1200 bps (V.22) and 2400 bps (V.22bis).

2) TCP/IP connectivity, initially based on leased lines between some of the EUnet backbone sites, is spreading rapidly in Europe. This connectivity improves the speed of transmission, lowers the costs (in the longer term) and potentially allows the provision of higher level protocols, such as FTP, SMTP and TELNET. Some EUnet backbones are already offering these services to their national members.

It should be emphasised that the rate of TCP/IP developments in Europe, as a whole and, member countries in particular is determined by various factors, such as availability of lines from national PTTs, the cost of leased line and the size of national networks. There are also various political considerations related to TCP/IP and ISO support in individual countries. It should however be emphasised that TCP/IP services over public data networks or dial-up lines are possibilities, so lack of leased lines is not a prohibitory factor.

The European TCP/IP network is distinct from the US Internet, but EUnet sites that are involved in research and development can be members of both networks if they satisfy US registration criteria.

As for networks numbers, official IP addresses, these can be obtained via a simple e-mail to:

HOSTMASTER@SRI-NIC.ARPA

Only networks with numbers that are officially obtained this way can be hooked up to InterEUnet. Everyone can obtain these for free. Your national EUnet backbone may have a template form for you to fill in. Obtaining full US Internet connect status requires a separate procedure. In principal any organisation that has research contacts on the US internet can obtain this connectivity. Organisations interested should prepare a formless application stating the name and purpose of your organisation, technical and management contact addresses, your IP network numbers and most importantly a short description of your contacts to the US organisations including a contact person there. EUnet has established a procedure to smooth these applications through the appropriate channels. It may be able to both play an intermediate role in obtaining full Internet connected status and it may help in speeding up the handling of your request.

The next section gives a backbone by backbone ordering of sites starting with the European Backbone.

EUROPE—The European Backbone (nic.EU.net, cwi.nl, mcvax) provides full IP support for any national backbone that is able to connect to it. It is also has full connected status on the US Internet. At present it has no trailblazers, but there are no restrictions on Dutch use (see NETHERLANDS below), so trailblazers could be used if the need arose.

The Netherlands—The Dutch Backbone (Netherlands.EU.net, hp4nl.nluug.nl, hp4nl) has full TCP/IP connected status to the European and US networks. At present 1 commercial and 8 academic sites have linked to the Dutch Backbone with IP, but at least 5 others plan to do so in near future. Trailblazers are now used in 40% of all Dutch sites and the Dutch backbone has 10 of its own.

France—The French Backbone (France.EU.net, inria.inria.fr, inria) also has full TCP/IP connected status to the European and US networks. At present it has 25 TCP/IP sites 22 of which have full connected status. France has the fastest growing TCP/IP network in EUnet and supports TCP/IP over leased lines, dial-up and PSS. Trailblazers in France are not yet approved.

Sweden—The Swedish Backbone (Sweden.EU.net, sunic.sunet.se, sunic) also has full TCP/IP connected status to the European and US networks. It is part of both EUnet and Nordunet (the Scandanavian Research and Development network). Nordunet has a mutual backup arrangement with EUnet, so Europe to US links can run over the Swedish link to NSFnet or the mcvax link to uunet. This is mutually advantageous to both networks. In national terms all universities have full IP links, but there are no commercial links at present. Trailblazers are legal; they are actually sold by the Swedish PTT. The Swedish backbone is at present using a Trailblazer for SLIP testing.

Denmark—The Danish Backbone (Denmark.EU.net, dkuug.dk, dkuug) also has full TCP/IP connected status to the European, US and Nordunet networks. Denmark offers full academic IP services and is investigating commercial services. Dkuug will have a pilot ISDN service from early September. The Danish backbone has 2 Trailblazer modems and there are no legal problems related to these modems in Denmark.

Finland—The Finnish Backbone (Finland.EU.net, tut.fi, tut) is similar to Sweden ad Denmark in academic terms, but it additionally offers IP services to commercial companies doing research. It has one experimental Trailblazer, but no Finnish PTT approval has yet been given.

Norway—The Norwegian backbone is on the move as I write, so things should soon be clearer, but Nordunet based IP services are available in Norway. No details of Trailblazer availability/legality are known at present.

Iceland—The situation in the final Scandanavian backbone (Iceland) is similar to Norway. Hopefully details may be available for later articles.

Italy—The Italian backbone (Italy.EU.net, i2unix.dist.unige.it, i2unix) has ordered a leased line to inria (France). It has 2-3 sites waiting to connect and it also has links to CNUCE the EARN site at Pisa, which in turn is linked via leased line to NSFnet. It has 3 trailblazers at i2unix and several Italian sites also use them.

Spain—The Spanish backbone (Spain.EU.net, dit.upm.es, goya) has local IP connectivity in Spain. The leased line position is unclear and Trailblazers are at present illegal. The situation

with leased lines is however being actively pursued, so things may change in the not too distant future.

Portugal—The Portugese backbone (Portugal.EU.net, inesc.pt inesc) is investigating leased lines and trailblazer links. As with Spain the availability and cost of leased lines is a problem, especially as the national networks are still relatively small. It is hoped to start Trailblazer trials from inesc in the near future.

Germany—The German backbone (germany.eu.net, unido.informatik.uni-dortmund.de, unido) should have a leased line to mcvax in the next few weeks. Several sites have plans to use this service. There are already test connections within Germany. Unido's connect status is as a fully registered part of the European and US Internets. Trailblazers are under test as part of a German PTT project. It is fairly certain that they will be legal in 1990. Unido has 2 on test.

Belgium—The Belgian backbone (Belgium.EU.net, prlb.philips.be, prlb2) has no leased line. It had plans for to set-up a leased line, but the decision had to be postponed due to the BUUG possibly assigning the backbone function to another institution. Whatever the final choice of the BUUG, it is expected that Belgium will have a leased line in the very near future. There are discussions in Belgium about the setting up of an academic and research network based on IP. Trailblazers are not yet legal.

Austria—The Austrian backbone (Austria.EU.net, tuvie.at, tuvie) has local IP, but Trailblazers are illegal. The situation with leased line connectivity is at present unclear.

Greece—The Greek backbone (Greece.EU.net, ariadne.csi.forth.gr, ariadne) is negotiating for a leased line to inria or i2unix. There is a possibility of sharing a leased line with EARN running TCP/IP over SNA. In terms of Trailblazers it has 4 but no lines to run them on.

Yugoslavia—The Yugoslav backbone (Yugoslavia.EU.net, idcyuug) has local IP in Lyubljana, but leased line costs at present prohibit any international links. There are no trailblazers in Yugoslavia.

Ireland—The Irish backbone (Ireland.EU.net, tcdcs) has local IP and plans to connect to CWI via leased line, cost however, is a problem. No Trailblazers are currently in use.

Great Britain—The British backbone (Britain.EU.net, ukc.ac.uk, ukc) hopes to have full backbone IP connectivity in the next few weeks. Extensions of IP services beyond ukc is unclear at present. Ukc has 2 trailblazers and the use of Trailblazers in Britain is rapidly expanding.

Status Report from Ariadne

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The GRUnet

There is a new small UNIX Network in Greece, the GRUnet, which is based on dialup lines. GRUnet consists of fourteen sites and its rate of growth is rather slow, about five to eight sites per year. Three sites are receiving news but eight to ten sites will receive news towards the end of this year. This new network mainly offers services to universities but also to some companies as well.

Current Status on node ariadne (CSI-FORTH)

Last year there ware many changes, both in software and hardware. First of all we have swapped the old Vax with a Sun-3/280 running Sun-OS 4.0 with one GByte disk space (temporarily we ran on an old Sun-2/120).

The dialup lines increased this year to three: two modems hayes compatible at 1200bps and one Trailblazer modem. These dialup lines are used mostly by Greek sites.

Ariadne on x25: there is an x25 connection to the x25 network of the local PTT called Hellaspac, with baud rate 19200bps. There is also another one connection with x29 protocol with transfer rate 1200bps. These lines are used to communicate with the backbone sites of EUnet.

Evidently we registered the top level domain GR for Greece.

From the software point of view: we have tested (not yet installed) an mcvax-like router in conjunction with the sendmail and pathalias programs. We maintain the Greek maps here, in ariadne, getting all the other European maps from

the other backbone sites. A few months ago ariadne became a node on the EARN network. Ariadne connected to the Greek backbone of EARN, GREARN (4800bps, running urep V3.3).

GRUnet and EUnet

We currently maintain links to following backbones: goya, inria, mcvax, sunic, tuvie, ukc, unido. Except from the links to goya and unido which are bidirectional all other links are unidirectional starting from ariadne. A very good idea is using Trailblazers as backup of the x25 links and we would like to hear the thoughts of the other backboners on this idea.

Future Plans

We are planning to become an archive server. This will be done in one of two ways: the first is based on a video tape drive and the second on Optical disks. To retrieve the desired software there will be a remote query program. We do not have any experience on that so we would expect some help from other experienced backboners on implementing this idea.

To improve our services we are thinking of starting up an EARN gateway for GR domain (GREARN, the central node for Greece is also maintained by another group at CSI-FORTH).

The GRUUG group is under our consideration. We would like to get some precise information on how other UNIX Groups are organising and are providing services.

Our basic intention is to get an IP connection to join InterEUnet. This is rather complicated because the cost of a leased line is too high. For this purpose there are two possibilities. The first one is to get a leased line to i2unix (Italy), which will be connected to inria (France). The other one solution is to share the existing line from Greece to France with Greek backbone of EARN, GREARN. We hope that first we can convince Montpellier people to pass our traffic to Sophia Antipolis and together with INRIA we could find a way to get our traffic routed on the European IP. We also hope that we will have an IP connection in either of the above ways in the next three or four months.

Typical Statistics per month (Mail and News)

The following table shows the traffic on node ariadne:

Mail & News Statistics (1-22/7/89)
(in Kbytes)

Site	Sent	Received
goya	12.1	320.1
inria	25	459.8
mcvax	757.6	20522.6
sunic	0	0
tuvie	7.1	0.5
ukc	87.5	417.4
unido	87.4	515.6
Total	976.7	22236
Est. total to the end of July	1200	35000
Greek Sites	4342.7	251.3
Est. total to the end of July	12000	350
Total	5319.4	22487.3
Est. total to the end of July	13200	35350

The news part of the above statistics is : from mcvax we got this month about 20250 Kbytes news and we send to Greek sites about 9160 Kbytes news.

There was a problem with sunic this month. Their PAD was out of work.

There is as yet no estimate of traffic via GREARN.

Management Committee Meeting

10th May, 1989

MINUTES

The meeting opened at 10:00 with the following committee members present: President Greg Rose (GR), Secretary Tim Roper (TR), Treasurer Michael Tuke (MT), Chris Maltby (CM), Frank Crawford (FC), Rich Burridge (RB) and Tim Segall (TS). Also present was the AUUGN Editor John Carey (JC).

1. Apologies
   Pat Duffy (PD), who had been invited to attend to discuss publicity for AUUG89, had apologised for being unable to attend.

2. Minutes of last meeting (3rd February, 1988)
   TR pointed out that TS was not present, as incorrectly stated. Moved CM/TS **That the minutes of the last meeting thus amended be accepted.** Carried.

3. Business arising from Minutes
   Re 8, TR reported that no summer meetings had eventuated.

   Re 9, TR reported that ACMS had been so advised.

   Re 11, TR pointed out that Computing Systems was not revenue neutral but was an expense incurred by AUUG as a benefit to Institutional members.

4. President's Report
   The President reported that he had written two President's letters. He expressed regret at the failure of the summer meetings to eventuate. He expressed the opinion that 1988/89 had been a successful year overall and mentioned the special offers that had occurred.

   Moved CM/FC **That the President's report be accepted.** Carried.

5. Secretary's Report
   TR reported on the following.

   (a) The Inauugral Software Distribution
   Approximately thirty-two orders had been received and filled so far and that no more orders were to be accepted.

   (b) Nutshell Handbook Offer
   TR tabled a letter from David Purdue re the current state of orders. No more orders were to be accepted.

   (c) USENIX San Diego Proceedings
   Fifty copies has been purchased at a total cost of $US1410.00 to be sold to members at cost viz. $A39 plus $A6 post/packing. Fourteen copies has been sold to date (plus one for the AUUG library).

   (d) Membership
   Reminders had been sent to 23 Institutional members and 193 Ordinary members.

Numbers of financial members were 62 Institutional, 283 Ordinary and 9 Student. Unfinancial members totalled 5 Institutional and 27 Ordinary. There were 19 newsletter Subscriptions. Corresponding figures as at last meeting were 38, 239, 8, 6, 21 and 21.

(e) Computing Systems
Volume 1 Numbers 2, 3 and 4 had been sent to Institutional members. Volume 2 Number 1 was about to be sent. The payment to University of California Press for $US1310.40 had allegedly not been received but the CBA had advised that it was paid on 27/2/89 by CBA New York. TR awaiting payment details from CBA.

(f) Direct Mail Campaigns
The 352 financial voting members as at April 1989 had been sent a nomination form plus the AUUG89 Call for Papers with a covering letter. Some 149 unfinancial and student members and newsletter recipients had been sent the CFP and a letter. About 1060 past members and attendees were about to be sent the CFP, a letter and Ordinary and Institutional membership application forms.

(g) Election of Officers 1989/90
14 people had nominated for various sub-sets of the positions.

TR tabled correspondence sent and received since the last meeting.

Moved CM/RB **That the Secretary's report be accepted.**
Carried.

6. Treasurer's Report
MT presented the following report:

Balance as of bank statement 1/5/89			18998.20
Cheques outstanding	603.33		
		603.33	
Deposits since statement	1779.00		
Cheques on hand	1789.00		
		3568.00	
Credit balance as at 10/5/89			21962.87

(1) Travel expenses of $900 anticipated for this meeting. (2) The Secretary had approximately $300 of cheques on hand from memberships.

AUUG88 Balance Sheet

Income	12550.41	
Expenses	12414.52	
Profit		135.89

(1) There are some bad debts outstanding. Approximately $300 is possible to be received.

(2) No consideration has been made for extra production of AUUGN conference issue.

Moved CM/TS **That the Treasurer's report be accepted.** Carried.

7. AUUGN Editor's Report

JC showed the new cover design as on Volume 10 Number 1. He reported on continuing quality and delivery problems. He had received a suggestion that we reprint the contents pages from the issues of the last three years; this was generally approved of. Another suggestion received that we print free job ads was rejected by the meeting. JC expressed disappointment at the low volume of Australian content. He reported that TR now had the library. It was resolved to put AUUG on the list of free AUUGN recipients to guarantee that AUUG always held at least one copy of each issue. JC mentioned that as he was now employed by Labtam he would be able to help David Purdue, the new Editor.

Moved RB/CM **That the Editor's report be accepted.** Carried.

8. 1989 Winter Conference and Exhibition

A proposal from PD for a direct mail campaign to attract people to AUUG89 was discussed. Moved FC/TS **That the proposal be accepted and expenditure of $10,000 be approved.**

A draft letter to go to major vendors over the President's signature was discussed and some changes made. TR to send letterhead and Institutional mailing list to PD for this.

It was resolved that AUUG should have a stand at the exhibition. TR to contact ACMS. Suggest that the stand sell back issues of AUUGN, residual Nutshell Handbooks, USENIX proceedings, standards documents and have on hand membership forms and information and the FaceSaver equipment.

The design of the T-shirt was discussed and the details left to CM.

GR reported that the following tutorials were proposed: C++, Administering ACSnet, Advanced Shell Programming, Device Drivers, Low Level Networking. It was resolved to increase the tutor's fee to $500.00 and to re-advertise for tutors. The cost of tutorials was set at $75 for one or $150 for two including lunch.

It was agreed that the following arrangement be offered to guest speakers at AUUG89: one economy return airfare, accommodation for one at the conference hotel (max. 5 nights), two papers to be offered, attendance at a press conference (Tuesday 8/8/89 PM suggested).

It was agreed that the programme committee chair and the Editor be offered the same benefits as a guest speaker, viz. travel, registration and accommodation.

9. 1990 Winter Conference and Exhibition

It was resolved to hold the 1990 event in Melbourne. TR to

write to CiTR thanking them for their efforts re holding it in Brisbane and suggesting that they host a summer meeting in 1990. The Melbourne/Sydney policy is to be reviewed at the AGM. An organiser for 1990 was yet to be decided.

TR suggested that Institutional members be given first go at exhibition space in the future. It was resolved to supply ACMS with the Institutional membership mailing list for early contact re exhibiting at AUUG90.

10. Membership Benefits
GR reported that Quadratron (of Q-Office etc.) had offered a 50% discount on first purchase.

TR described proposed membership cards. Moved TS/FC **That the Secretary be authorised to spend up to $500 on membership cards and receipts.** Carried.

11. Relationship with other Organisations
This item was deferred.

12. Election of Officers 1989/90
It was agreed that this item had already been covered.

13. Secretarial Assistance
GR reported that Softway now had Informix on the CT box known as **auug**.

14. Constitutional Changes
CM volunteered to co-ordinate proposed changes.

15. Other Business
The fees for the financial year 1989/90 were set as follows.

Ordinary membership	78
Institutional membership	325
Student membership	45
Newsletter subscription	90
Overseas surface mail	20
Overseas airmail: zones 1,2	35
zones 3,4,5	60

Moved CM/RB **That the Secretary be authorised to redesign the membership application forms.** Carried.

It was suggested that AUUG holds a competition for the best paper at AUUG89 the prize being an expense paid trip to present the paper at one or more summer meetings. There was general agreement.

16. Next Meeting
It was resolved that the next meeting should be held in Sydney on Tuesday 8th August, 1989 at 3pm and that the new AUUGN Editor should be invited to attend.

AUUGN Back Issues

Here are the details of back issues of which we still hold copies. All prices are in Australian dollars and include surface mail within Australia. For overseas surface mail add $2 per copy and for overseas airmail add $10 per copy.

pre 1984	Vol 1-4	various	$10 per copy
1984	Vol 5	Nos. 2,3,5,6	$10 per copy
		Nos. 1,4	unavailable
1985	Vol 6	Nos. 2,3,4,6	$10 per copy
		No. 1	unavailable
1986	Vol 7	Nos. 1,4-5,6	$10 per copy
		Nos. 2-3	unavailable (Note 2-3 and 4-5 are combined issues)
1987	Vol 8	Nos. 1-2,3-4	unavailable
		Nos. 5,6	$10 per copy
1988	Vol 9	Nos. 1,2,3	$10 per copy
		Nos. 4,5	$15 per copy

Please note that we do not accept purchase orders for back issues except from Institutional members. Orders enclosing payment in Australian dollars should be sent to:

AUUG Inc.
Back Issues Department
PO Box 366
Kensington NSW
Australia 2033

AUUG

Membership Categories

Once again a reminder for all "members" of AUUG to check that you are, in fact, a member, and that you still will be for the next two months.

There are 4 membership types, plus a newsletter subscription, any of which might be just right for you.

The membership categories are:

Institutional Member
Ordinary Member
Student Member
Honorary Life Member

Institutional memberships are primarily intended for university departments, companies, etc. This is a voting membership (one vote), which receives two copies of the newsletter. Institutional members can also delegate 2 representatives to attend AUUG meetings at members rates. AUUG is also keeping track of the licence status of institutional members. If, at some future date, we are able to offer a software tape distribution service, this would be available only to institutional members, whose relevant licences can be verified.

If your institution is not an institutional member, isn't it about time it became one?

Ordinary memberships are for individuals. This is also a voting membership (one vote), which receives a single copy of the newsletter. A primary difference from Institutional Membership is that the benefits of Ordinary Membership apply to the named member only. That is, only the member can obtain discounts on attendance at AUUG meetings, etc, sending a representative isn't permitted.

Are you an AUUG member?

Student Memberships are for full time students at recognised academic institutions. This is a non voting membership which receives a single copy of the newsletter. Otherwise the benefits are as for Ordinary Members.

Honorary Life Memberships are a category that isn't relevant yet. This membership you can't apply for, you must be elected to it. What's more, you must have been a member for at least 5 years before being elected. Since AUUG is only just approaching 3 years old, there is no-one eligible for this membership category yet.

Its also possible to subscribe to the newsletter without being an AUUG member. This saves you nothing financially, that is, the subscription price is the same as the membership dues. However, it might be appropriate for libraries, etc, which simply want copies of AUUGN to help fill their shelves, and have no actual interest in the contents, or the association.

Subscriptions are also available to members who have a need for more copies of AUUGN than their membership provides.

To find out if you are currently really an AUUG member, examine the mailing label of this AUUGN. In the lower right corner you will find information about your current membership status. The first letter is your membership type code, N for regular members, S for students, and I for institutions. Then follows your membership expiration date, in the format exp=MM/YY. The remaining information is for internal use.

Check that your membership isn't about to expire (or worse, hasn't expired already). Ask your colleagues if they received this issue of AUUGN, tell them that if not, it probably means that their membership has lapsed, or perhaps, they were never a member at all! Feel free to copy the membership forms, give one to everyone that you know.

If you want to join AUUG, or renew your membership, you will find forms in this issue of AUUGN. Send the appropriate form (with remittance) to the address indicated on it, and your membership will (re-)commence.

As a service to members, AUUG has arranged to accept payments via credit card. You can use your Bankcard (within Australia only), or your Mastercard by simply completing the authorisation on the application form.

AUUG

Application for Ordinary, or Student, Membership Australian UNIX* systems Users' Group.

*UNIX is a registered trademark of AT&T in the USA and other countries

To apply for membership of the AUUG, complete this form, and return it with payment in Australian Dollars, or credit card authorisation, to:

AUUG Membership Secretary
P O Box 366
Kensington NSW 2033
Australia

- Please don't send purchase orders — perhaps your purchasing department will consider this form to be an invoice.
- Foreign applicants please send a bank draft drawn on an Australian bank, or credit card authorisation, and remember to select either surface or air mail.

I, ... do hereby apply for

☐ Renewal/New* Membership of the AUUG $78.00

☐ Renewal/New* Student Membership $45.00 (note certification on other side)

☐ International Surface Mail $20.00

☐ International Air Mail $60.00 (note local zone rate available)

Total remitted AUD$_____
(cheque, money order, credit card)

* Delete one.

I agree that this membership will be subject to the rules and by-laws of the AUUG as in force from time to time, and that this membership will run for 12 consecutive months commencing on the first day of the month following that during which this application is processed.

Date: __/__/__ Signed: _____

☐ Tick this box if you wish your name & address withheld from mailing lists made available to vendors.

For our mailing database - please type or print clearly:

Name: ..... Phone: ..... (bh)

Address: .... (ah)

..... Net Address: .....

.....

..... *Write "Unchanged" if details have not*

..... *altered and this is a renewal.*

Please charge $_____ to my ☐ Bankcard ☐ Visa ☐ Mastercard.

Account number: _____ _____ _____ _____. Expiry date: __/__.

Name on card: _____ Signed: _____

Office use only:

Chq: bank _____ *bsb* ____-____ *a/c* _____ *#* _____

Date: __/__/__ *$* *CC type* ___ *V#* _____

Who: _____ *Member#* _____

Student Member Certification *(to be completed by a member of the academic staff)*

I, ... certify that

..... *(name)*

is a full time student at ..... *(institution)*

and is expected to graduate approximately ___/___/___.

Title: _____ Signature: _____

AUUG

Application for Institutional Membership
Australian UNIX* systems Users' Group.

*UNIX is a registered trademark of AT&T in the USA and other countries.

To apply for institutional membership of the AUUG, complete this form, and return it with payment in Australian Dollars, or credit card authorisation, to:

AUUG Membership Secretary
P O Box 366
Kensington NSW 2033
Australia

• Foreign applicants please send a bank draft drawn on an Australian bank, or credit card authorisation, and remember to select either surface or air mail.

..... does hereby apply for

☐ New/Renewal* Institutional Membership of AUUG $325.00

☐ International Surface Mail $ 40.00

☐ International Air Mail $120.00

Total remitted AUD$_____
(cheque, money order, credit card)

* Delete one.

I/We agree that this membership will be subject to the rules and by-laws of the AUUG as in force from time to time, and that this membership will run for 12 consecutive months commencing on the first day of the month following that during which this application is processed.

I/We understand that I/we will receive two copies of the AUUG newsletter, and may send two representatives to AUUG sponsored events at member rates, though I/we will have only one vote in AUUG elections, and other ballots as required.

Date: __/__/__ Signed: _____

Title: _____

☐ Tick this box if you wish your name & address withheld from mailing lists made available to vendors.

For our mailing database - please type or print clearly:

Administrative contact, and formal representative:

Name: ..... Phone: ..... (bh)

Address: .... (ah)

..... Net Address: .....

.....

..... *Write "Unchanged" if details have not*

..... *altered and this is a renewal.*

Please charge $_____ to my/our ☐ Bankcard ☐ Visa ☐ Mastercard.

Account number: _____ _____ _____ _____. Expiry date: __/__.

Name on card: _____ Signed: _____

Office use only: **Please complete the other side.**

Chq: bank _____ *bsb* ____-____ *a/c* _____ *#* _____

Date: __/__/__ *$* *CC type* ___ *V#* _____

Who: _____ *Member#* _____

Please send newsletters to the following addresses:

Name: ..... Phone: ..... (bh)
Address: .... (ah)
..... Net Address: .....
.....
.....
.....

Name: ..... Phone: ..... (bh)
Address: .... (ah)
..... Net Address: .....
.....
.....
.....

Write "unchanged" if this is a renewal, and details are not to be altered.

Please indicate which Unix licences you hold, and include copies of the title and signature pages of each, if these have not been sent previously.

Note: Recent licences usally revoke earlier ones, please indicate only licences which are current, and indicate any which have been revoked since your last membership form was submitted.

Note: Most binary licensees will have a System III or System V (of one variant or another) binary licence, even if the system supplied by your vendor is based upon V7 or 4BSD. There is no such thing as a BSD binary licence, and V7 binary licences were very rare, and expensive.

- ☐ System V.3 source
- ☐ System V.2 source
- ☐ System V source
- ☐ System III source
- ☐ 4.2 or 4.3 BSD source
- ☐ 4.1 BSD source
- ☐ V7 source
- ☐ Other *(Indicate which)* .....

- ☐ System V.3 binary
- ☐ System V.2 binary
- ☐ System V binary
- ☐ System III binary

AUUG

Application for Newsletter Subscription
Australian UNIX* systems Users' Group.

*UNIX is a registered trademark of AT&T in the USA and other countries

Non members who wish to apply for a subscription to the Australian UNIX systems User Group Newsletter, or members who desire additional subscriptions, should complete this form and return it to:

AUUG Membership Secretary
P O Box 366
Kensington NSW 2033
Australia

- Please don't send purchase orders — perhaps your purchasing department will consider this form to be an invoice.
- Foreign applicants please send a bank draft drawn on an Australian bank, or credit card authorisation, and remember to select either surface or air mail.
- Use multiple copies of this form if copies of AUUGN are to be dispatched to differing addresses.

Please *enter / renew* my subscription for the Australian UNIX systems User Group Newsletter, as follows:

Name: ..... Phone: ..... (bh)

Address: .... (ah)

..... Net Address: .....

.....

..... *Write "Unchanged" if address has*

..... *not altered and this is a renewal.*

For each copy requested, I enclose:

☐ Subscription to AUUGN	$ 90.00
☐ International Surface Mail	$ 20.00
☐ International Air Mail	$ 60.00

Copies requested (to above address) _____

Total remitted AUD$_____

(cheque, money order, credit card)

☐ Tick this box if you wish your name & address withheld from mailing lists made available to vendors.

Please charge $_____ to my ☐ Bankcard ☐ Visa ☐ Mastercard.

Account number: _____ _____ _____ _____. Expiry date: __/__.

Name on card: _____ Signed: _____

Office use only:

Chq: bank _____ *bsb* _____ - _____ *a/c* _____ *#* _____

Date: __/__/__ *$* *CC type* ___ *V#* _____

Who: _____ *Subscr#* _____

AUUG

Notification of Change of Address
Australian UNIX* systems Users' Group.

*UNIX is a registered trademark of AT&T in the USA and other countries.

If you have changed your mailing address, please complete this form, and return it to:

AUUG Membership Secretary
PO Box 366
Kensington NSW 2033
Australia

Please allow at least 4 weeks for the change of address to take effect.

Old address (or attach a mailing label)

Name: ..... Phone: ..... (bh)

Address: .... (ah)

.....

Net Address: .....

.....

.....

.....

New address (leave unaltered details blank)

Name: ..... Phone: ..... (bh)

Address: .... (ah)

.....

Net Address: .....

.....

.....

.....

Office use only:

Date: ___/___/___

Who: _____ *Memb#* _____