NEWSLETTER

EUUG

European UNIX® systems User Group

Volume 10, No. 2
Summer 1990

CONTENTS

EUROPEAN UNIX® SYSTEMS USER GROUP NEWSLETTER

Volume 10, Number 2
Summer 1990

ISSN 1011-4211

Editorial Team:

Philip Peake
Publications Executive
CETIA
9 Avenue de Laponie
ZAC de Courtaboeuf
91940 Les Ulis
France
philip@cetia.fr

Alain Williams
Editor
Parliament Hill Computers Ltd.
7 Prospect Street
Caversham
Berkshire RG4 8JB
U.K.
addw@phcomp.co.uk
Tel: +44 734 461232
Fax: +44 734 474194

Typesetting:

Gina Baikenycz
The Instruction Set Ltd.
City House
190 City Road
London EC1V 2QH
U.K.
gina@inset.co.uk

Printed by:
Rank Xerox (Copy Bureaux) Ltd.
68-74 Rochester Place
London NW1 9JX
U.K.

Published by:
The EUUG
Owles Hall
Buntingford
Hertfordshire SG9 9PL
U.K.
euug@EU.net
Tel: +44 763 73039
Fax: +44 763 73255

Editorial

Alain D. D. Williams
addw@phcomp.co.uk

Parliament Hill Computers Ltd

The Family Expands

Two new national groups have been born and joined the EUUG. These are the CSUUG in Czechoslovakia, and the CHUUG in Switzerland.

Peter Pronay is already known to you and gives you the CSUUG midwife's point of view on page 6.

Our cousins in Colombia have a thriving User Group as Gustavo Betancourt reports on page 7.

Reports from the older Netherlands, French, Danish, UK and US groups can be found on pages 9, 10, 13, 16, 44.

The increasing size of the EUUG means that it has the resources to become involved in new activities. Helen Gibbons outlines the current ones and describes new directions on page 2.

Munich Conference

As this newsletter is being typeset the latest EUUG conference is drawing to a close. It seems to have been a great success – judging by comments sent to me via the e-mail service at the conference.

Our next conference is in Nice this autumn, you will find outline information on page 19.

The UKUUG conference will also be worth attending and is fully described on page 26.

Information Supplied

In this issue Doc Strange explains on page 48 how to Manage Users and make their life (and yours) easier.

Vijayakumar Vijayaratnam talks about Transaction Processing in Open Systems (which as we know *really* means UNIX) and gives hints as to what is to come. This is one of the areas where we will see an big expansion of Unix systems in years to come. See page 58.

Information Wanted

An EUUGN a while back contained a list of UNIX related magazines and other periodicals. That information is now out of date, I would like to print a new version.

Please send me a list of those that you know about. I will need: the name, publisher (and address), price, frequency of publication, which countries it is available in, and an idea of what it is about.

I would rather receive the information more than once than not at all, so do not assume that someone else will tell me about a popular periodical in your country.

UNIX Today!

The publishers of **UNIX Today!** have agreed that EUUG members can subscribe free of charge. Please find an application form on page 47.

Many thanks to Donal Daly (of the IUUG) for arranging this.

What do you think of the EUUGN ?

You, the readers, are the most important part of the EUUGN. Does it tell you and contain the things that *you* want to know ?

Please mail/write/phone to tell me what *you* think, and how it could be improved.

Future EUUGN Dates

The publication dates and the copy dates for future issues of the EUUGN are printed below:

	Copy Date	Publication Date
1990	16 July	1 September
	15 October	1 December
1991	14 January	1 March
	15 April	1 June

EUUG Executive Report

Helen Gibbons
euug@EU.net

The European UNIX systems User Group
Owles Hall
Buntingford
United Kingdom

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

Governing Board Meeting

The twelfth Governing Board Meeting was held recently on the 22nd April in Munich. All of the 18 EUUG National Groups were represented, plus two observer representatives from USENIX and from the EUnet Backbone Assembly, which ensured both a good turn out and lively discussions.

The board accepted applications from the Swiss Group, CHUUG, and the Czechoslovakian Group, CSUUG, and both were warmly welcomed to the EUUG. Further applications are pending from Spain, Turkey and the USSR and it is hoped that applications from these groups will be available for acceptance at the next meeting. The EUUG membership is growing rapidly, showing an increase of approximately 25% since the same time last year.

The 1989 Financial Accounts were reviewed at the meeting and were found to be satisfactory, with expenditure in both the general account and conference accounts having been very well controlled. The turnover of the Group has grown to be very considerable which means that the EUUG is now a very significant operation.

Collection of contributions from the National Groups has been good over the year enabling sound financial planning for extra services.

The next Governing Board Meeting will be held in Nice, on 21st October, immediately before the Nice Conference.

Software Distribution

The EUUG library of available software distribution continues to grow. As an experiment the software distribution at the Munich Conference was available on QIC 24 format cassettes, as well as reel to reel 9 track tapes, and it seemed that this was popular, although it might lead to increased costs in the future.

As well as the conference distribution tapes, the SSBA tape from the AFUU has been added to the collection. SSBA is a collection of benchmarks tied together with a system which will automatically run the benchmarks and produce a report detailing various performance characteristics. The tapes are available from Frank Kupier, Centrum voor Wiskunde en

Informatica, Kruislaan 413, 1098 SJ Amsterdam, The Netherlands.[1]

E-mail directory and EUnet Glossy

The first edition of the E-mail Directory produced last year was so popular that it was quickly sold out and had to be reprinted. A second, updated, edition is in the course of preparation and is expected to be ready by the Autumn. The cost has not yet been fixed, but anyone wishing to pre-order one of these new directories is welcome to do so though the EUUG Central Office at Owles Hall.

A small glossy brochure describing EUnet has also been printed and is available free of charge.

EUUG Actions Regarding UNIX Standards

The EUUG participation in POSIX standardisation efforts within ISO/SC22/WG15 is currently jointly supported by both the EUUG and USENIX and is performed by Dominic Dunlop, who has attended meetings in Brussels in 1989 and in Copenhagen in 1990. His reports have been published in this newsletter.

The effort put in by the EUUG in participating to ISO in 1989 has contributed to the visibility of the EUUG and has resulted in more information being available to members. The time is now ripe for the EUUG to undertake a second level of involvement.

It is proposed to increase the involvement of the EUUG in POSIX and Open Systems Standardisation issues and in particular to concentrate on problems relating to internationalisation to which Europeans should have a significant contribution. This involvement should aim at promoting discussions and co-ordinating view points withing and between National Groups to raise an EUUG consolidated view on these issues.

To adequately support these involvements the EUUG is seeking to employ a Standards Manager who would initiate, organise and moderate on internal EUUG Forum on POSIX and Open Systems Standardisation issues with a strong emphasis on internationalisation problems. It is envisaged that the new Standards Manager will organise working groups within the EUUG, gather ideas and inputs from National Groups and and prepare contributions to standards bodies.

New Services

Among the new services being planned by the EUUG is the publication of a full membership directory which will include the names and addresses of each member of each National Group – if they give their permission to be included. The directory will be available for distribution within the EUUG membership. The Hungarian Group has offered to help in the compilation of the directory.

An extension of this service to produce commercially available labels is also being studied.

Another new service is the proposal that the EUUG should organise a general Working Group on a European level on a topic of interest to all National Groups such as "Portability based on POSIX and X/Open". The French Group, AFUU, has agreed to work out the implementation of this and in co-operation with the Executive Committee, to start the scheme as soon as possible.

EUUG Managers

In order to improve the efficiency of our organisation, the EUUG is now in the process of employing professional managers to take over the responsibility of EUUG Events, of coordination between the National Groups, of organisation of standards activities, as well as to support the organisation of EUnet.

General post descriptions are given in this Newsletter.

1. See his column elsewhere in this newsletter.

The New Executive Committee

Elections were held at the Governing Board meeting in Munich and the following were elected onto the Executive Committee:

Michel Gien	+33 1 30 570022	mg@chorus.fr
Nigel Martin	+44 71 251 2128	nigel@inset.co.uk
KIM BIEL-Nielsen	+45 42 894999	kbn@uniware.dk
Dr Ernst Janich	+49 731 1526 464	janich@nixulm.de
Neil Todd	+44 491 671964	neil@gid.co.uk
Daniel Karrenberg	+31 20 5924112	dfk@cwi.nl
Philip Peake	+33 1 69 07 82 47	philip@vogon.cetia.fr
Johan Helsingius	+358 0 427 632	julf@penet.fi
Norman Hull	+353 503 31745	norman@q2rs.ie
Frances Brazier	+31 20 5483885	frances@psy.vu.nl
Helen Gibbons	+44 763 73039	euug@EU.net

The new chairman, elected at the meeting, is Michel Gien. Many thanks are expressed to Teus Hagen for his hardworking efforts as Chairman over the past years.

Conferences

The Munich Conference was a great success with approximately 650 attendances at the Technical sessions and Tutorials.

The next Conference will be held in Nice at the Nice Acropolis with Tutorials being held on 22nd and 23rd October 1990 and the Technical sessions being held from 24th–26th October. Early booking forms are available elsewhere in this newsletter, and full booking forms will be available from the EUUG Central Office at Owles Hall by the end of June.

The accompanying Exhibition is being organised by AFUU though BIRP com-tec and anyone wishing to book a stand should contact BIRP com-tec at 25, rue d'Astorg, 75008 Paris, France. Tel +33 1 42 66 46 36.

Positions Vacant

EUUG Manager

To increase the professionalism within its organisation the EUUG solicits applications for the position of an EUUG manager.

The manager will be responsible for the organisation of current and new EUUG events and national group coordination and liaison.

The manager will be required to have the following qualifications and merits at an international level:

1. Organisational and managerial experience, especially skills in people management.
2. Technical and political knowledge of and experience in Open Systems, in particular Unix.
3. Good communicative skills in at least two languages.
4. Creative and capable of initiating new activities.
5. Experience in using e-mail.

EUnet Manager

To increase the level of service and organisation the EUUG solicits applications for the position of EUUG EUnet manager.

The manager will be required to have the following qualifications and merits at an international level:

1. Managerial and organisational experience.
2. Technical and political knowledge of and skills in networking.
3. Communications skills in at least 2 languages.
4. Experience in using e-mail.

The manager will be responsible for:

— The new organisational structure of EUnet.

— Exploring new activities.

— Coordination between national and international organisations

Detailed descriptions of these positions are available though the EUUG secretariat. Applications, including a full CV and references, should be sent before 1st July 1990 to:

EUUG Chairman
The European UNIX systems User Group
Owles Hall
Buntingford
Hertfordshire SG9 9PL
UNITED KINGDOM

Please mark the envelope with "EUUG Manager" or "EUnet Manager" as appropriate.

All applications will be treated in confidence.

CSUUG Announced

Peter Pronay
peter@iaccs.uucp

Institute of Cybernetics
Hanulova 5A
484416 Bratislava
Czechoslovakia

Peter Pronay is a researcher in the Institute of Applied Cybernetics in Bratislava, Czechoslovakia. He was a systems programmer, responsible for LAN and WAN networking in the International Institute of Applied Systems Analysis (IIASA) - a UNIX stronghold - in Laxenburg, Austria from 1981 to 1986. He has 8 years of UNIX experience. His main fields of interest comprise LAN and WAN networking and UNIX system administration. He also does part-time consulting to the users of SINIX (UNIX from SIEMENS).

CSUUG Established

On March 6, the UNIX users in Czechoslovakia met in Brno and established the Czechoslovak UNIX Systems Users Group - CSUUG. They approved the bye-laws of the national group and elected the board. The chairman of the board is Mr Zdenek Jirkovec. He is a systems programmer at CSAD Prague (CSAD is the principal bus & truck transport company in Czechoslovakia). The board has 4 more members.

One of the decisions of the first meeting was, that the national backbone of EUnet will be in the Institute of Applied Cybernetics in Bratislava (sitename "iaccs" on EUnet since several months). Gejza Buechler and Peter Pronay will be running the backbone. Mr. Vladimir Verosta from KS Brno will be editing the CSUUG non-periodical. Mr. Jiri Bek from the Economical University in Prague will be looking after the finances.

More than 35 institutions expressed interest in membership in the CSUUG. However, the administrative aspect of creating organisations in Czechoslovakia is complicated recently. Several hundreds of different groups, political parties, movements, etc. are waiting for being registered. And the bureaucratic machine cannot handle the load quickly enough. So, the official birth of CSUUG from the point of view of the authorities in Czechoslovakia had not yet taken place when I wrote this, but it very likely existed when the Newsletter appeared. Since hard currency is a problem in the country, CSUUG will not know it's real number of members before the membership dues are paid. And that cannot happen before the registration is done ...

As you see, life can be hard even when the revolution is soft. Nevertheless, from the point of view of the UNIX community, the CSUUG is here and well off.

Contact details for the CSUUG chairman is:

Zdenek Jirkovec
CSAD KNV Praha
Krizikova 4-6
186 50 PRAHA
Czechoslovakia

Net: zdenek@iaccs.uucp
Tel: +422 228642, ext. 434 (no dial through)

Stop press:
The CSUUG membership application was accepted at the EUUG governing board held in Munich on the 22nd of April, 1990 (along with that of the CHUUG - Switzerland). The application for membership of EUnet was also accepted at the EUnet meeting on the 23rd of April.

UNIX and the Users' Group in Colombia "UNICO"

Gustavo Betancourt

UNI/BASE
Carrera 7a. No. 75-51 Ofc 201
Apartado Aereo No. 45260
Bogota
D.E. Colombia
+57 1 2355571

The following paper gives a brief summary of the state of the UNIX Operating system inside our country. This will be in four parts:

1. A brief description of the country.
2. The history of UNIX in Colombia.
3. The UNIX market in Colombia.
4. Asociacion Colombiana de Usuarios de UNIX de Colombia UNICO - UNIFORUM COLOMBIA.

Colombia - The Country

Colombia is a tropical country which has coasts on both the Atlantic and the Pacific. It's area is about 1 million square Km, or roughly the size of France, and has a population of 30 million. The economy is based on agricultural products such as coffee, flour, fruit and oil. The most important cities are Bogotá, Medellin, Cali, and Barranquilla.

The History of UNIX in Colombia

The UNIX System was brought to Colombia by the Colombian students who returned from universities in the U.S.A. Most of them came from Berkeley, Ohio and Purdue – therefore UNIX was very special to them. They introduced various concepts to the academic community; most notably software tools and the use of the C language. UNIX was mainly in the academic realm and was used only theoretically.

The first real users appeared in 1983 on Altos, Tandy, Radio Shack and Wycat machines using Microsoft Xenix System III. Most programmers used COBOL as they had been told that C was only for Operating Systems developers and because of that most of the software was ported from proprietary systems onto the UNIX boxes.

In 1984 the Universidad de los Andes in Bogotá began to train students in the use of C. These students were recruited by the software houses and companies that were then UNIX users and the use of the C language became more popular in the UNIX world. Additionally NCR was offering UNIX on it's Tower 1632, and Borroughs on the XE-550.

Due to various political issues the sale of computers was repressed for two years from 1982 to 1983.

During 1984 it was still hard, and so only by 1985/1986 did the growth of UNIX really get started. SCO Xenix went into the small companies, the NCR Towers (XP-32-600), Altos, and Unisys into the medium sized companies.

At the end of 1986 Texas Instruments started to move from it's proprietary operating systems to UNIX and Xenix. Due to their large installed base in Colombia UNIX grew faster than anyone expected.

Today most of the hardware vendors are very concerned with UNIX involvement in Colombia, Hewlett Packard is only selling UNIX solutions,

Data General is offering mainly UNIX machines, Wang lost it's place in the market because it took so long to move to UNIX.

The last "Computer Convention" was a sort of UNIX Exposition due to the importance of UNIX in the Colombian Marketplace.

Colombia's UNIX Market

UNIX is very strong in Colombia, in multiuser systems it is becoming the number one player. More than 60% of the buying decisions are for UNIX, most of the government bids are specifying UNIX (80%), the financial sector is moving to UNIX but they still continue to use proprietary systems mainly in on-line applications.

Universities and the educational sector in general are mostly UNIX users or are moving to UNIX. The ones that are not using UNIX for the Central system almost always have UNIX boxes for educational purposes at least.

UNICO - Uniforum Colombia

The Colombian user group UNICO started more or less in 1986 with infrequent meetings, it got itself organised in 1987 but almost died because of financial problems. It recovered in 1989 and right now is growing very quickly.

The group is governed by a group of officers who are elected every year – normally in February. These are: the president, the secretary and three others including the treasurer and supplementary officers. The objectives and purposes of UNICO are as follows:

- To promote the use of UNIX.
- To integrate the users.
- To increase knowledge of the system.
- To get acquainted with the UNIX community outside Colombia.

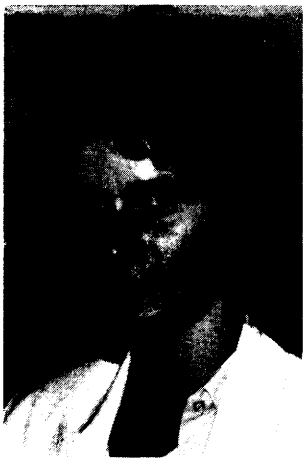
The main activities of the group are:

- Presentation of interesting cases and solutions.
- Lectures about new products.
- Conferences on new products.
- Briefing of special events such as Uniforum, UNIX Expo and similar events.

We have various types of member:

- Corporate Sponsors.
  Normally hardware vendors in our country.
- Corporate Members.
  These are the big corporations in which use of UNIX is predominant.
- Normal Members.
  Individual users of UNIX.

News from the Netherlands



Frances Brazier
frances@psy.vu.nl

Department of Cognitive Psychology,
Vrije Universiteit,
de Boelelaan 1115,
1081 HV 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 8 years. Human-machine interfaces and information retrieval are her major fields of interest.

NLUUG Membership

The NLUUG's membership continues to increase in number. In the table below the increase in academic, industrial and individual membership is shown over the last two years.

April 88	April 89	April 89	
59	80	90	academic members (@ Dfl 300)
133	164	193	industrial members (@ Dfl 600)
20	35	35	individual members (@ Dfl 100)
212	279	319	TOTAL

Conferences

Our last conference in November was on UNIX and Connectivity. 394 attendees (a record number) visited the parallel technical sessions, short tutorials and the exhibition. All sessions (including the tutorials) and the proceedings were included in the registration fee. A (very) small profit was made. Abstracts of the sessions were included in the Autumn EUUG Newsletter.

Our next conference is on *parallel systems*. It will be held on May 10th of this year. The programme consists of parallel technical presentations. Proceedings will be produced.

Backbone

Seven sites (five via SURFnet) are now connected to InterEUnet. An archive server has been installed and is now being tested.

All sites have been sent copies of Adams & Frey's book "Email Addressing & Networks". All new sites are given copies of the two nutshell books: "Using UUCP" and "Managing UUCP".

A New Service

The NLUUG buro has decided to provide its members with a new service: a help desk. An attempt will be made to answer all questions without favouring one vendor or another.

AFUU Report

Anne Garnery
anne@afuu.fr

Association Francaise de Utilisateurs d'UNIX
11 rue Carnot
94270 Le Kremlin-Bicetre

AFUU Membership and Fee Structure at April 1990

The AFUU currently has 1105 members; this figure represents an increase of 25% since this time last year.

There is a significant growth of the end-user representatives, with a real dynamic and concrete participation, as in the working groups, (Portability, End-users Group ...), so long as in the AFUU Board (3 representatives elected at the last AGM).

A New By-Law

As presented in our position paper for the Governing Board, a new by-law was voted on at the last annual general meeting in November.

a. The concept of Open Systems has been added to the denomination of the AFUU.

b. The members are now clearly identified as individuals, coming under categories of users (end-users, hardware, services or software suppliers, universities, research laboratories, students, ...).

c. Associate members can join the AFUU. They do not have a vote, but they may benefit from some services, and they may support AFUU or some specific event organised by AFUU.

AFUU Membership

MEMBERSHIP CATEGORIES	1988	1989 April	1990 April
Members comming under institutional category			
Manufacturers	127	140	171
Software Houses	240	255	292
Public & Private Institutions acting as users	102	185	266
Academic & research Institutions	160	224	288
Members coming under individual category			
Direct individual	56	56	49
Students	17	24	39
TOTAL	702	884	1105
Supplementary copies			
Individual copies of Tribunix	13	21	25
Free mailings	21	17	30
Individual copies of Tribunix and EUUG Newsletter	42	38	51
Total numbers	76	76	106

Publications

This activity is developing, due to the large requirement for information which is needed by our members.

The AFUU is diversifying its publications, in order to adapt the style and the frequency to the nature of the information that they contain, and to the interests of AFUU members:

— Tribunix, our bi-monthly newsletter presents leading articles about technical and strategic aspects.

— *La Lettre*, our monthly letter, briefly reports on industry events and on the group's activities.

But the AFUU also enlarges the number of its publications:

— The AFUU/Library Bulletin Board presents every 4 months the new acquisitions and the summaries of each international or national newspapers we have subscribed to. The last one, No 3, has 75 pages.

— The AFUU/Special Issues, such as the AFUU/Benchmarks Issue printed in March, which presents, on 140 pages, leading articles about the Benchmarks and all the results of the SSBA (Suite Synthetique de Benchmarks de l'AFUU, that is the Synthetic Sequence of AFUU Benchmarks).

— We should not forget the annual UNIX Products Directory printed by the CXP (Software Experimental Center), with the participation of the AFUU. This year, it is entirely devoted to business applications in France, with more than 500 pages.

The Working Groups

The current 11 working groups represent between 350 and 500 members who meet each month, in order to exchange and to produce concrete work, concerning both technical aspects, and strategic ones. The total number of the monthly meetings, added to the AFUU board meetings, is 12 or 15. Most of the groups meet in the conference room of the AFUU office.

The new technical working groups are PUBLIC DOMAIN, INTERFACE and REAL TIME. The NETWORK GROUP has a new development, and his leader is chair of the recent AFUU/FNET Committee, which is creating a strong synergy between the Naluug AFUU and the Nalnet Fnet.

The strategic aspects of the Open Systems are studied within two new groups: the END USERS GROUP, which is expected to allow the expression of end-users common positions in front of the market; and the OBSERVATOIRE UNIX, which analyses the factors of UNIX insight the enterprises, with an end-users panel which will be regularly consulted.

The Benchmark group has been very productive. Tribunix is going to publish their results regularly from now on, and once yearly, there will be a special issue summarising all results to date. This is in addition to the regular column about Benchmarking in Tribunix.

Our group is pleased to answer any query from manufacturer or purchaser about the Benchmarks. The SSBA tape may be acquired either from EUUG[1] or directly from AFUU.

1. See Frank Kupier's EUUG Software Distribution column elsewhere in this newsletter.

The Events

25, 26, 27 October, 1989 : JOURNEES UNIX DE GRENOBLE

This national event presented an exhibit on 1200 M2 and a three days conference and tutorials. (500 attendees). The main item was the specific synergy between the research and the industry which is developing in Grenoble.

24 November, 1989 : CONVENTION AFUU - CNIT PARIS-LA DEFENSE

The AFUU AGM. The afternoon was devoted to the presentation of the working groups results.

25 January, 1990 : JOURNEE AFUU/MIP A TOULOUSE

Organised by the regional AFUU-Unit of Midi-Pyrénées, in the south of France, this one-day conference was devoted to the Architectures. (120 attendees).

26-30 March, 1990 : CONVENTION UNIX 90 AU CNIT PARIS-LA DEFENSE

146 exhibitors in 10,000 square meters, 11 tutorials, 60 conferences. For its third edition, Convention UNIX has welcomed 7500 visitors, that is 1/3 more than last year, with 460 attendees at the conference.

The main items were Europe, with the active presence of the EUUG which presented its activities on its own booth, and Open systems, with the papers of A. Rodriguez from the ECC, and J. Totman from X/Open. A press conference by OSF with Ira Golstein and H.J. Jeanrond met a good success.

24-26 OCTOBER, 1990 : NICE IS UNIX, Open System Show

The exhibition will be organised by AFUU and the Birp-com.tec, in parallel with the EUUG Conference.

****

"VisionWare is a range of PC/UNIX integration software designed to unite the different worlds of character-based UNIX, DOS, OS/2 and the X Window System under a single, standard user interface : Microsoft Windows.

PC-Connect and XVision allow multiple character-based UNIX applications and X clients to be displayed alongside DOS applications on the PC console, with copy-and-paste and file transfer facilities in any direction. PC-Connect's iconic desktop offers a 'point-and-click' mechanism for invoking applications from any of the environments, anywhere on a network.

SQL-Connect brings record-level data resident in UNIX databases directly into DOS applications on a PC, delivering a highly configurable, industry-standard and user-friendly executive information system.

For further information, contact Nicola Richardson at VisionWare Ltd on (0532 788858) or nic@vision.uucp"

Danish Group Report and DKnet Report

Keld Jørn Simonsen
keld@dkuug.dk

Indre by Terminalen
University of Copenhagen
Studiestraede 6 o.g
DK 1455 Copenhagen K
Denmark

Keld is the chairman of the Danish group, he holds a master degree in Legislate Law and a batchelor in Comp. Sc.

Report from the Danish Group

Well, time to update you on the Danish UNIX Group activities.

Membership

DKUUG has at present 350 members, of which 300 are organisational members paying 275 ECU a year, 10 are "grand" members paying 550 ECU a year, and 40 are individual members paying 75 ECU a year.

We have about 600 people on our mailing list who get our newsletter and information about our meetings etc. Thus we have 250 people which are extra subscribers to the newsletter. This is because each organisational member can get 3 copies of the newsletter, and "grand" members have 10 copies of the newsletter included in the membership fee. The mailings are addressed individually to people at the firm or institute, but only to the mailing address of the firm or institute. One exception here is students, who are considered employees of their institutes, but can have their mail sent to their private address.

Although all the extra subscribers act as "members" of the Danish group and we do not pay anything to the EUUG for them, we think the arrangement is in line with current EUUG rules as the member is the firm, and the extra subscribers are just getting the service we provide to that firm.

Additionally we have about 40 extra subscribers to the EUUG Newsletter paying 45 ECU a year.

Board Members

We had elections last November, and the current board consists of:

Keld Simonsen	-	chairman	keld@dkuug.dk
Kim Biel-Nielsen	-	vice chairman	kbn@uniware.dk
Tonny Andersen	-	treasurer	tonny@acs.dk
Kim Frei	-	secretary	kgf@dkuug.dk
Kim Storm	-	chairman network	storm@texas.dk
Gitte Rasmussen	-	chairman newsletter & PR	gra@dde.dk
Mary-Ann Frydendahl	-	chairman strategies	maf@oldk1.dk
Hans Kjærulff			hans@dkuug.dk
Peter Petersen			pp@proces.auc.dk
Anne Hertz Kühnell			IBM

The whole board can be reached at bestyr@dkuug.dk

We have 7 subcommittees: membership meetings, the network, newsletter & PR, strategy, membership services, external relations, and economy. About 25 people are active in the subcommittees.

Finances

Currently our finances are quite good, as we have received most of the annual membership fee at the beginning of the year. But at the end of last year it was necessary to obtain a loan from the bank of ECU 12,000 to cover our expenses. Most of our assets are bound in equipment for the network and the secretariat. We have raised the membership fee and changed the accounting year to prevent further loans (hopefully).

Relations to Other Groups

In addition to being affiliated to the EUUG, the Danish group is also affiliated to UniForum (formerly /usr/group). Being one of the older groups in UniForum, we are now engaged in UniForum strategy planning. UniForum is restructuring itself to become more international.

We cooperate in Denmark with the Danish Computer Society and the PC Society. Also we cooperate with the user groups of UNIX vendors, including NCR, HP, Philips, RC computer and the communes (the local public administration). We are participating in the standardisation efforts via the Danish Standards Association. In networking we cooperate with the local EARN and RARE people.

The Network

The Danish group runs the Danish part of EUnet, called DKnet. We have our own paid people and we have 4 SUN workstations of our own to run the backbone services and a dial-in service. We got a SUN-2 from GN data (free!), and Nokia repaired our machines and provided us with some extra disk and RAM (free!), so we now have 4 SUN workstations of our own for our backbone operations.

We introduced 8-bit mail in February, and a lot of character sets can be serviced, including ISO 8859, IBM code pages, HP Roman-8 and Digital. The network is the biggest economic activity of the group.

We plan to provide IP and OSI services to academic and commercial members (academic members can have IP services now using the network of the Ministry of Education).

Publications

We publish 10 issues a year of the "DKUUG-nyt" newsletter, in A5 format and about 30 pages each issue. It appears monthly (almost) and we do get quite a lot of advertisements in it. The contents are general UNIX articles and announcements of the services of the group, including membership meetings and tape distributions.

Once a year we produce a Danish UNIX Market Overview with a line for each UNIX-related product on the Danish market. The 3rd issue boosted about 2500 products from 120 vendors.

We also have material on the group for new members and material for the network (all in Danish).

PR Actions

We participate in exhibitions with our own booth. This is currently done once a year.

Membership Meetings

The membership meetings are of course one of our major activities. We are increasing the activities here even further (incredible!) from the level of 7 meetings of yesteryear to nine meetings including 2 two-day meetings, and something completely new: technical club meetings in Copenhagen once a month. This is in total about a doubling of our activities.

The full-day meetings are priced at about 125 ECU a day, with some international speakers and located at professional conference sites (hotels). Our secretariat does all the arrangements. We have 3 full day and 2 two day arrangements scheduled. Between 60 and 130 people turn up to these arrangements. The last one on UNIX and mainframes drew 120.

The 4 half day ("afternoon") arrangements are free of charge to the members, non-members pay. They are often held at a vendors place. Recent events were at Bull and IBM, where about 160 people turned up to listen to IBMs attitude to UNIX.

The club evenings are held at the Computer Science Institute at University of Copenhagen (DIKU). It is a new activity, and the first meeting got 60 people discussing LEX and YACC. The next meeting is about networking. Olivetti has donated a 3B2/400 to be used for hands on experience at the club meetings.

Scheduled events are:

15-16 May	Odense	Desktop UNIX, Systems development
12 June	Copenhagen	Administrative systems
16 Aug	Aalborg	UNIX in the public sector
20 Sep	Copenhagen	UNIX in the financial world
11 Oct	Copenhagen	Trends and Technology
28-29 Nov	Copenhagen	Yearly meeting and conference

The meetings are announced separately by mail to the members, and also to some other UNIX-related mailing lists that we have access to. The direct mailing gives more response than just announcing it in the newsletter. The meetings are also announced in the news and by e-mail.

Tape Distributions

We are distributing the most popular of the EUUG tapes, and also some tapes that we have collected ourselves. The latter include the latest releases of GNU software, X Windows, TeX and ISODE. We distribute both in QIC-24 format and old 1/2 inch tapes. Lately we have got some requests from abroad for these tapes!

That completes the news from the Danish Group.

DKnet Report

Since the Nice networking meeting this is what has happened in Denmark:

Our "netpasser" Claus Engdahl left us on the 1st of January. We had to replace him with two people, Claus Dræby (cld@dkuug.dk) and Jørgen Jensen (jensen@dkuug.dk), by December these people were working for us. Keld Simonsen has also done some considerable work in the shift period.

The prices were revised in November, effective from 1st January. There are now flat fees of 350 ECU for mail and 1750 ECU for news per year. This is no change for news, but 50 ECU more for mail.

We have about 100 sites on mail and 22 sites for news.

We had a severe crash in December with two hard disks failing and we moved the mail backbone (dkuug.dk) to a SUN-3. We also got more lines this way, hooking most lines up via an old CS/100 terminal box. We were down for about a whole week, also because of ethernet and memory problems on the new equipment.

We have installed (almost!) a new dial-up service on an old SUN-2, which we have got repaired by Nokia; they even upgraded it with a 300 Mb disk and some extra RAM for free! Thanks to Nokia for their helpfulness.

We are now able to provide 8-bit mail, and that is including quite some character sets like ISO 8859-1 (and 7 other 8859 charsets), ISO 6937-2, IBMcodepage 437, 850, 860, 863 and 865, HP Roman8 and Digital MCS. Conversion is done between all these character sets and also 7-bit character sets, of which there are defined about 20 different flavours, including Danish, Swedish, Norwegian, Finnish, German, French, British, Italian, Portuguese, Spanish, Jugoslavian, Hungarian and US ASCII. There are also conversions to about 20 different flavours of EBCDIC, although this has not the biggest usage in the mail system.

We have installed ISODE X.500, FTAM and VT services and are looking for X.400 services. The X.500 service has been incorporated in the worldwide X.500 name service.

We are looking for ways to do IP services to commercial firms and we are working on some cheap way of doing it, as it seems that people are not prepared to pay for CISCOs etc.

Well, there is a lot to do, wish we had the time for it all!

UKUUG News

Mick Farmer
mick@cs.bbk.ac.uk

Birkbeck College
Malet St
London WC1
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.

Start Bit

I'll start this report once again with details of our e–mail distribution lists which you can contact for information concerning our group's activities:

- ukuug@ukc.ac.uk – general enquiry to the UKUUG.
- ukuug–conf@ukc.ac.uk – general enquiry concerning the forthcoming London conference (see below).
- ukuug–exec@ukc.ac.uk – specific enquiry to our executive committee.
- ukuug–tech@ukc.ac.uk – technical enquiry concerning the tutorials or proceedings at the forthcoming London conference (see below).
- ukuug–videos@ukc.ac.uk – enquiry about our Workshop videos (see below).

Membership Figures

Our membership continues to flourish with a 7% increase in the last three months. Figure 1 is a graph showing our membership figures over the previous twelve months.

It is interesting to note that all categories of membership are showing an increase and that we've doubled our membership over the last twelve months. At this rate we'll have more members than AFUU in two years time!

UNIX System Administration Workshop

A very successful one–day workshop was held in London (England) on 14 February at the Institute of Education. The topics discussed were listed in our previous report and a video of the proceedings is available (see below).

UNIX – The Legend Evolves

We are hosting a major technical conference on 11-13 July in London (England) at the Royal Lancaster Hotel preceded by two days of tutorials. Most of the major developers of UNIX will be there:

- **Plan 9 from Bell Labs** – The first public announcement of Bell Labs' successor to UNIX including presentations from Rob Pike, Dave Presotto and Tom Duff.
- **The C Programming Language** – Ken Thompson, Dennis Ritchie and Tom Cargill presenting their views on C and C++.

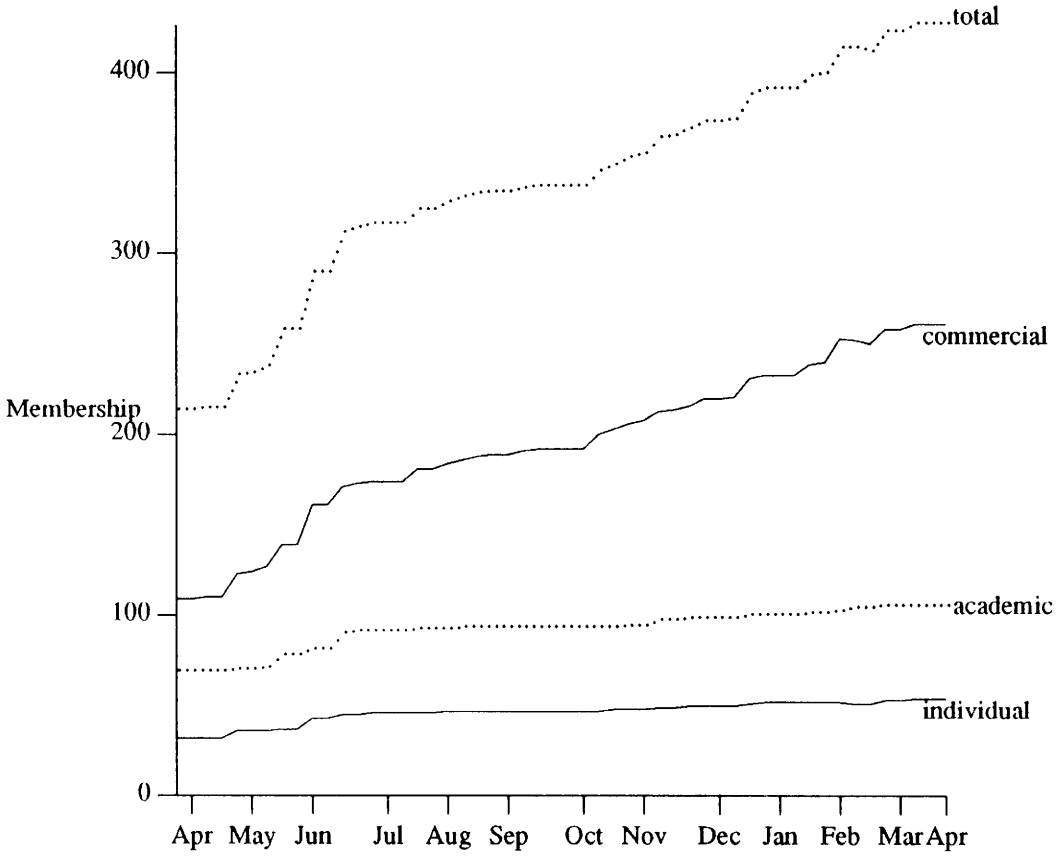


Figure 1 – UKUUG Membership Figures

- **Software Development** – Brian Kernighan on Software Productivity, Stuart Feldman on Software Development and Andrew Tanenbaum on Distributed Systems for the 1990s.
- **Berkeley** – Kirk McKusick on a Pageable Memory-based File System and Chris Torek on Device Support.
- **Recreations** – Jon Bentley on Pictures of Programs and Mike Hawley on Music Software.
- **And more ...**

Can you afford to miss the event of the year? Registration details can be found elsewhere in this issue or by e–mail from ukuug–conf@ukc.ac.uk.

Yet More Events

- Our Winter '90 Technical Meeting will take place at Queen's College, Cambridge (England) on 17-19 December, 1990. As with all our winter meetings, this one will have a strong networking flavour.
- Our Summer '91 meeting will be held in Liverpool (England) in June or July 1991.
- Our Winter '91 meeting will take place in Edinburgh (Scotland) in December 1991.

Please note that EUUG members and members of other national groups are always welcome to attend our events.

Workshop Videos

We have produced two video programmes on relevant material to those working in the UNIX community. Both of these are the result of successful one–day workshops organised by the UKUUG.

- UNIX Security

  A three hour video discussing the following topics:

  — The HACKMAN project; System V/MLS; An analysis of the Internet worm.

  — The Sun Yellow Pages system; Secure RPC; Some myths and facts about UNIX security.

  — And more...

- UNIX System Administration

  A four hour video discussing the following topics:

  — POSIX developments; System management; Managing X.400 mail systems.

  — Project Athena; System administration in a heterogeneous environment.

  — And more...

Each video costs £60.00 (plus VAT in the UK) and can be ordered from the UKUUG Secretariat, by e–mail from ukuug-videos@ukc.ac.uk, or directly from:

Birkbeck College Video Services
Department of Computer Science
Birkbeck College
Malet Street
London WC1E 7HX

+44 71 631 6351

London UNIX User Group (LUUG)

This lively group continues to meet on the last Thursday of every month (except December). Contact Andrew Findlay for details (Andrew.Findlay@brunel.ac.uk).

FaceSaver Project

Many of you will have seen our system working at the Munich conference and we hope you were happy with your pictures! The kit will be present at all major UKUUG events increasing the number of faces saved. It can also be hired to interested persons or groups. Contact me in the first instance at the address given at the top of this article.

This project is being supported by Acorn Computers Ltd. of Cambridge (England) as part of their on–going commitment to UNIX .

Software Distribution Service

This is another service that the UKUUG has introduced for our members. The service is based at Imperial College where a UKUUG-purchased disk has been installed. The software is currently being loaded but already people have been requesting the latest version of X11 R4.

Stop Bit

We intend to start a newsletter as a service for our members, initially planning on six issues per year. We are currently looking for an editor of this august organ.

****

For those who don't know,

Mick Farmer
(of UKUUG)

GOT MARRIED
on Maundy Thursday

to

Susan Small

We wish of them all the very best with their future life together, blah, blah, blah ....

European UNIX* systems User Group

PRELIMINARY ANNOUNCEMENT and CALL FOR PAPERS

EUUG Autumn '90 Conference and Exhibition at

Nice Acropolis
22-26 October 1990

PROGRAMME

Technical Tutorials on UNIX and closely related subjects will be held on Monday 22nd and Tuesday 23rd October.

The three day Conference will follow on 24th, 25th and 26 October starting at 09:30 on the Wednesday and continuing until 17:30 on the Friday. Subjects discussed at the conference will include:

- Software Management for large projects
  + Configuration Management
  + Maintenance Management
  + Update and Release control
- OSI and OSI applications on a Unix platform
- System Administration in a Heterogeneous environment
- Security and Audit
  + Secure Unix
  + Securing existing systems
- Unix on non English speaking environments
- User Interface Management Systems (UIMS)

TUTORIALS

Each Tutorial lasts for one whole day and will start at 09:30. Only EUUG National Group members or Direct Members are premitted to attend Tutorials.

The provisional Tutorial Programme is as follows:

Monday 22nd October

Tutorial M1	A comparison of X.11 Toolkits Tutor: Jamie Watson
Tutorial M2	Introduction to Object Oriented Programs Tutor: David Taenzer
Tutorial M3	MACH Tutor: Nawaf Bitar
Tutorial M4	Special Topics in C Tutor: Carol Meier
Tutorial M5	A Technical Overview of SVR 4 Tutor: Chris Schoettle

Tuesday 23rd October

Tutorial T6	UNIX System V Performance Tools & Techniques Tutor: Danny Chen
Tutorial T7	InterViews Tutor: Mark Linton
Tutorial T8	Software Tools for User Interface Development Tutor: Erjk Hardy
Tutorial T9	Introduction to UNIX – a set of tutorials for beginners Tutor: Prof. Axel Schreiner
Tutorial T10	C++ Programming Tutor: Tom Cargill

The EUUG reserves the right to cancel tutorials should it be deemed necessary. Please note that the presentation of a tutorial at an EUUG conference does not necessarily imply endorsement of the content.

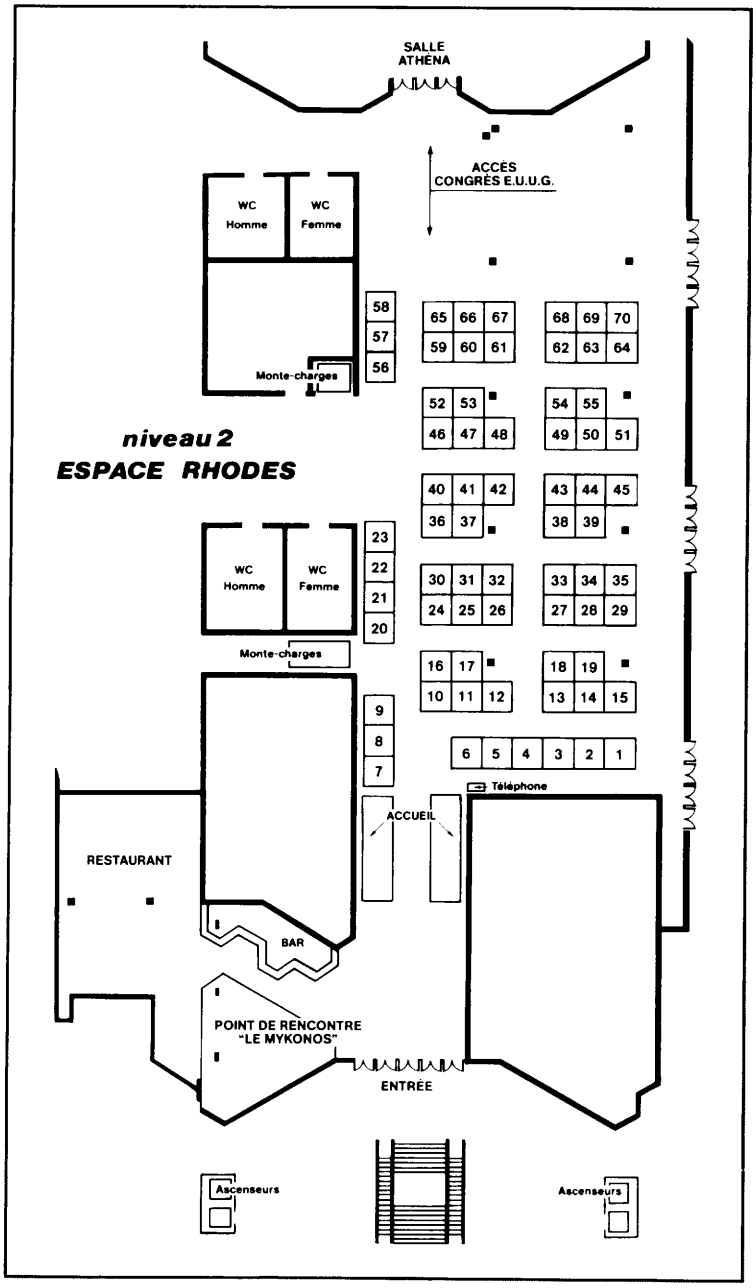
STUDENT GRANTS

Grants are being offered to assist students to attend the conference. Applications must be submitted before 31st August 1990, so that the applicant may be informed before the event whether a grant will be forthcoming. Grant payment will not be made until after the conference. Priority will be given to:

1. Students giving a talk at the conference.
2. Students doing work for the EUUG or a national Group.
3. Students.
4. Other deserving cases such as research students.

THE EXHIBITION

A Major exhibition is being organised in conjunction with this conference by the AFUU though BIRP com-tec.



To book space at the exhibition please contact BIRP com-tec at:

HOW TO BOOK

A Conference Registration Booklet giving full details of the programmme and events, cost and hotel booking will be printed and distributed to all EUUG members by the end of June. If you would like a copy of the booklet sent to a non member, please inform the secretariat.

COSTS

Tutorials (members only)

Tutorials per person if booked before 31st July		£ 205
Tutorials per person if booked after 1st August		£ 305
Tutorials per member registering and paying on the door		£ 405

Conference

	3 Day Conference if booked before 31st July	members	£ 210
		non members	£ 290
	3 Day Conference if booked after 1st August	members	£ 305
		non members	£ 385
*	3 Day Conference registering and paying on the door	members	£ 405
		non members	£ 485

* these can only be accepted if space allows.

TAPE DISTRIBUTION

There will be a tape distribution at the conference on either tape or QIC 24 cassette at a pre-booking cost of £ 60.

Conference & Tutorial Enquiries

Helen Gibbons
EUUG Secretariat
Owles Hall
Buntingford
Herts SG9 9PL
UK
Tel: +44 763 73039
Fax: +44 763 73255
Net: euug@EU.net

Exhibition Enquiries

BIRP com-tec
25, rue d'Astorg
75008 PARIS
France

Tel: +33 1 42 66 46 36
Fax: +33 1 42 66 90 55

Advance Booking Form for Conference and Tutorials

Please complete this form and send it, with cheque or evidence of payment, to **EUUG Secretariat, Owles Hall, Buntingford, HERTS SG9 9PL, U.K.** (Block Capitals please). Please note that forms sent without cheque or evidence of payment will be returned to you unregistered.

Surname ..... Usual First Name .....

Company/Organisation .....

Address .....

Country ..... Post/Zip Code .....

Telephone/Fax/Telex/Email .....

EUUG member? Yes ☐ No ☐ Student? Yes ☐ No ☐

Please read the sections on "COSTS" and remember that pre-booking saves money.

All payments must be made in pounds sterling (£)

CONFERENCE

Please reserve me a 3-day place for the Technical Sessions £ _____

TUTORIALS (members only)

Please reserve me a place for Tutorial No _____ on Monday 22nd October £ _____

Please reserve me a place for Tutorial No _____ on Tuesday 23rd October £ _____

Do you require vegetarian meals? Yes ☐ No ☐ £ _____

Extra ticket for Social Event £30 each ☐ £ _____

EUUG

Please enrol me as an institutional member
of EUUG via the appropriate national group Yes ☐ No ☐

TAPE

Please reserve me a copy of the Conference Tape ☐ 1600 BPI ½" £ _____

All tapes £60 each. ☐ QIC-24 ¼" £ _____

PAYMENT METHOD Total £ _____

☐ UK Cheque, Banker's Draft or Eurocheque. The cheque must be enclosed.

☐ Direct Payment. The bank advice note showing details and date of payment must be enclosed. All bank charges must be borne by you and not the EUUG—please tell the bank this. EUUG must receive the actual amount due.

☐ by VISA

☐ by ACCESS/EUROCARD/MASTER CARD

Name as it appears on the card (block capitals) .....

Address of card holder .....

.....

.....

Card Account No. ..... Date of Expiry .....

Signed ..... Date .....

EUUG

European UNIX® systems User Group

4.3BSD MANUALS

The USENIX Association now kindly offers all members of the EUUG 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 reproduction, as well as a new and extensive index. All manuals are printed in a photo-reduced 6″ x 9″ format with individually coloured and labelled 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 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 volumes, you may order complete sets only.

The manuals are available now. To order return a completed '4.3BSD Manual Reproduction Authorisation and Order Form' to the EUUG secretariat along with your remittance. You must be an EUUG member.

The EUUG has bulk shipped these manuals from the USA thereby saving you 5 kg transatlantic postage.

Manual	Cost
User's Manual Set (3 Volumes) User's Reference Manual User's Supplementary Documents Master Index	**£25.00/set**
Programmer's Manual Set (3 Volumes) Programmer's Reference Manual Programmer's Supplementary Documents, Volume 1 Programmer's Supplementary Documents, Volume 2	**£25.00/set**
System Manager's Manual (1 Volume)	**£10.00**

4.2BSD Manuals are No Longer Available

4.3BSD Manual Reproduction Authorisation

Date _____

As an EUUG member† in good standing, and pursuant to the copyright notice as found on the rear of the cover page of the Unix Ⓡ/32V Programmer's Manual stating that:

"Holders of a Unix Ⓡ/32V software licence are permitted to copy this document, or any portion of it, as necessary for licenced use of the software, provided this copyright notice and statement of permission are included."

I hereby appoint the USENIX Association/EUUG as my agents, to act on my behalf to duplicate and provide me with such copies of the Berkeley 4.3BSD Manuals as I may request.

Signed _____

Institution (if Institutional Member) _____

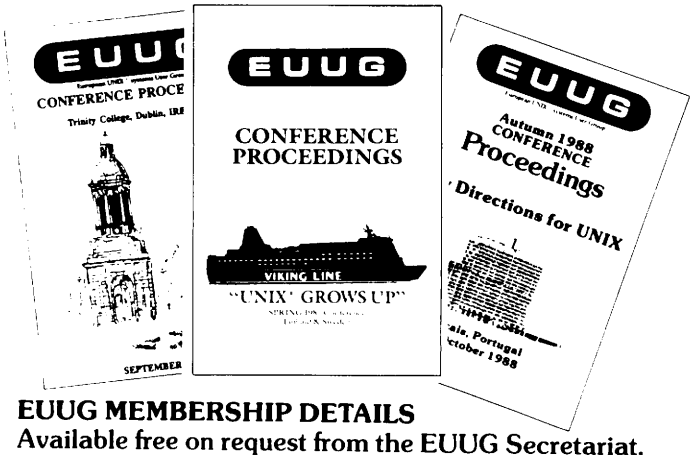
† Members of EUUG National groups are automatically members of the EUUG.

EUUG

European UNIX® systems User Group

ADDITIONAL PUBLICATIONS AVAILABLE FROM EUUG

Title		Cost
EUUG—CONFERENCE—PROCEEDINGS		
Autumn 1983	— Dublin	£2.00
Spring 1984	— Nijmegen	£5.00
Autumn 1984	— Cambridge	£5.00
Spring 1985	— Paris	£5.00
Autumn 1985	— Copenhagen	£10.00
Spring 1987	— Finland/Sweden	£20.00
Autumn 1987	— Dublin	£20.00
Spring 1988	— London	£20.00
Autumn 1989	— Vienna	£20.00
European E-Mail Directory, Spring 1990	— Munich	£20.00
4.3BSD MANUAL	— User's Manual Set	£25.00
	Programmer's Set	£25.00
	System Manager's Manual	£10.00
Language C—Standard Proposal		£8.00
USENIX Conference Proceedings C++ —Santa Fe, 1987		£30.00
A Directory of Electronic Mail !%@:: Addressing & Networking (Frey & Adams)		£20.00



EUUG MEMBERSHIP DETAILS
Available free on request from the EUUG Secretariat.

UKUUG PROCEEDINGS
Winter 1988 –UKNet Meeting, Canterbury **£10.00**

If you wish to order any of the above publications, or receive details of EUUG Membership, please use the order form below and return it to the EUUG Secretariat, Owles Hall, Owles Lane, Buntingford, Herts. SG9 9PL, U.K. If you are ordering publications then your remittance should be enclosed by cheque, bank draft etc. made payable to EUUG.

ORDER FORM

Name _____

Address _____

_____

_____

_____

Phone _____

Network Address _____

The prices shown include surface postal charges. All payments must be in Sterling by means of a cheque drawn on a UK bank, or a Eurocheque, or instruction to charge your VISA card (quoting the number, the date of expiry, the name of the card holder, and the address which VISA use when corresponding with you).

Please send me _____ no. copy/ies of the following:

_____

_____

I would like to receive membership details of the EUUG YES/NO

User's Manual Set (3 Volumes) at **£25.00/set** = £_____
Programmer's Manual Set (3 volumes) at **£25.00/set** = £_____
System Manager's Manual (1 volume) at **£10.00/set** = £_____
Total £_____

We accept
Visa, Access, Euro Card, Master Card, UK cheques, and Euro cheques.

Please complete name and address of credit card holder if different from name and address on order form.

NAME _____

ADDRESS _____

_____

_____

Expiry Date: _____

Credit Card No:

I enclose my cheque, bank draft etc., in the sum of £_____ and understand a receipt will be sent.

Make your cheque payable to 'EUUG' and post it with this order form

To: EUUG Secretariat, Owles Hall, Owles Lane, Buntingford, Herts. SG9 9PL, United Kingdom.
Tel: Royston (0763) 73039 +44 763 73039
Fax: Royston (0763) 73255 +44 763 73255

For BSD manuals please sign Manual Reproduction Authorisation Notice overleaf.

This page may be photocopied for use.

United Kingdom Unix systems User Group

UNIX – THE LEGEND EVOLVES

9-13th July 1990
Royal Lancaster Hotel, London, UK

The *UKUUG 1990 Technical Conference*, all day *Tutorials* and *Table-top Exhibition* will be held in London. The Tutorials will be held on 9th and 10th July followed by the three day Technical Conference on 11th, 12th and 13th July. The event will be accompanied by a Table-top Exhibition demonstrating cooperative computer software and hardware from different manufacturers. A *Welcome Reception* will be held in the Headquarters Hotel on 11th July, while both walkways of Tower Bridge offering breath taking views across London have been booked for the *Conference Fork Buffet* on 12th July.

Monday	9th July	Tutorials M1–M4
Tuesday	10th July	Tutorials T1–T4
Wednesday	11th July	Technical Conference
		Table-top Exhibition
		Welcome Reception
Thursday	12th July	Technical Conference
		Table-top Exhibition
		Tower Bridge Buffet
Friday	13th July	Technical Conference
		Table-top Exhibition

For the five days, the prestigious Nine Kings Conference Suite in the Royal Lancaster Hotel London will house the entire event. The hotel is situated within a few minutes of Marble Arch and Paddington Station, with magnificent panoramic views over the Italian Gardens in Hyde Park, and Kensington Gardens. Bus stops for the West End, and Lancaster Gate Tube Station are directly beneath the hotel.

All Enquires

UKUUG Secretariat
Owles Hall, Owles Lane
Buntingford
Hertfordshire SG9 9PL, UK

Tel: +44 763 73039
Fax: +44 763 73255
email: ukuug-conf@ukc.ac.uk

The UKUUG Conference, entitled **UNIX – the Legend Evolves**, has attracted the highest quality technical papers from world renowned exponents of UNIX related systems, thus affording an international forum for the presentation of current work on a wide variety of topics associated with the UNIX and C programming environments. An impressive array of present and past members of the Computer Science Research Centre (CSRC) at Bell Laboratories will be speaking at the Conference. All of these world famous researchers made original and innovative contributions to the UNIX programming environment. Up to V7 the *dramatis personae* were relatively few. Never officially recognised in any organisational chart, the group coalesced voluntarily. Most of these original contributors are still with CSRC or its divestiture-induced clone at Bell Communications Research.

The UNIX kernel has **evolved** over a 20-year period during which *Brian Kernighan* coined the name UNIX, popularised the tools philosophy, and with co-author *Rob Pike*, wrote the definitive book 'The UNIX Programming Environment'. Throughout this era, the UNIX system has acquired *legendary* status whilst exploding in coverage and geographic distribution, and bestowing great honour and world-wide recognition upon its primary contributors, *Ken Thompson* and *Dennis Ritchie*. It has reflected respect upon many others who have built upon their foundation.

Rob Pike, *Ken Thompson*, *Dave Presotto* and *Tom Duff* have been conducting research into a successor to the UNIX system entitled **Plan 9 from Bell Labs** which will be announced for the first time at UKUUG's Conference. The result is a novel and innovative distributed system which runs counter to the popular trend in computing environments, namely workstations connected by local area networks. The distributed computing environment is assembled from separate machines acting as CPU servers, file servers, and terminals. The pieces are connected by a single file-orientated protocol and local name space operations. Each will speak on his contribution to the proposal of a new system based on clusters of file servers and execute servers connected by high speed networks. Rob will give the Keynote talk on Plan 9. Ken's presentation explores his new Plan 9 C Compiler while Dave will tell us about Multiprocessor Streams for Plan 9. Tom's talk is about the Shell for Plan 9.

Brian Kernighan will speak upon the progress which has been made in the development of programming environments, languages, tools and even 'methodologies', discussing how past experiences will influence their future evolution. *Stu Feldman* will expound on large scale software development in a UNIX environment.

Dennis Ritchie, *Ken Thompson* and *Tom Cargill* will present current and future thoughts on C and C++ and their associated compilers. Dennis will speak about Variable-Size Arrays in C and Tom's talk covers C++ and Multiple Inheritance.

Andy Tanenbaum, the prolific author, will look beyond UNIX into the 1990s. *Jon Bentley* and *Mike Hawley* will entertain us with talks and demonstrations using pictures and music software. *Kirk McKusick*, *Mike Karels* and *Chris Torek* will provide up to date information concerning Berkeley UNIX.

TUTORIALS ON MONDAY 9th JULY

M1 Introduction to Mach Internals – Nawaf Bitar

Intended Audience: This tutorial is intended for systems developers and technical managers who would like to learn about the inner workings of the Mach operating system.

The tutorial will study the Mach 2.5 operating system in detail. It will first cover the Mach architecture, philosophy and vision and continue with a thorough study of the three major subsystems (task/thread management, virtual memory and inter-task communication). Next will be a discussion of the Mach environment and the various user services that are available including the Mach Interface Generator, Network Message Server and Network Memory Server. Finally, the tutorial will conclude with a presentation of Mach's future direction focusing on the micro-kernel architecture and the dekernelisation of UNIX.

M2 Introduction to X Concepts – Berry Kercheval

Intended Audience: There is a great deal of interest in learning to program for the X Window System. Many people come to tutorials for this, and the presenters do a yeoman job of covering an admittedly vast topic in a comprehensive way, but something is necessarily lost when one has such a vast ground to cover. The main problem is not lack of coverage, but lack of focus on basic concepts. What is required is have the *basics* explained *thoroughly*, and once they are understood, the details of all the arcane Xlib functions would be more easily comprehended. This tutorial will be of great benefit to all attendees, whether complete novice X programmers, or those with some experience who are still floundering with the concepts. It will *not* focus on, for example, 'What are all the functions that manipulate a Graphics Context?', but instead will cover 'What *is* a Graphics Context, and how is it used?'

X Basics: Clients and Servers. Event streams. Screens, Displays and Windows. Setting up the X connection. X programming conventions.
Windows: The window hierarchy. Creating a window. What is the difference between creating, mapping and configuring a window?
Graphics Operations: Concepts: Bitmaps and Pixmaps, Visuals – what they are and how to choose one, Graphics contexts – what are they and what are they good for? Colour – colour maps and use of colour. Drawing: how and where to draw pictures, points, lines and arcs, tiles and stipples, images. Cursors: How to make one, how to use one.
Text operations: Fonts – choosing them and using them, drawing text in a window.
Events: What is an event? Input events: Keyboard, Button, motion. X server events: Exposure, Resize, etc. How to select the ones you want. What to do with them.
Window Managers: What they do for you and what you do for them.
Advanced concepts: (if there is time)

M3 Introduction to the TCP/IP Protocol Suite –Richard Stevens

Intended Audience: This tutorial is for UNIX users and programmers interested in learning about networking, using the TCP/IP Internet as the example. No networking knowledge is assumed.

Introduction to networking: Internetworking, layers, encapsulation, multiplexing, packet switching, gateways, modes of service, end-to-end versus hop-by-hop, buffering and out-of-band data, broadcast, routing, connections and associations, client-server model.
TCP/IP protocols: RFCs, Internet addresses, IP, TCP, UDP, ICMP, ARP, RARP, subnetting, port numbers, concurrent servers.
TCP/IP Internet: current topology, NSFNET, regional and international networks.
Routing in the Internet
Domain Name System
Applications: file transfer (FTP, TFTP), remote login (TELNET, rlogin), electronic mail (SMTP), network management (SNMP).

M4 Topics in C programming – Carol Meier

Intended Audience: This course is aimed at intermediate C programmers who are comfortable with C basics and are ready to explore some of its more powerful features. C programmers interested in ANSI C changes to the language, portability, or object-oriented techniques in C will find these issues addressed in the context of learning the advanced C features listed in the course description.

This tutorial covers a variety of C topics with an emphasis on ANSI changes to the language, portability techniques, and object-oriented programming. We will start with a quick review of C program structure, storage classes and memory model, including the new ANSI const and volatile features. Next we will cover C preprocessor macros, conditional compilation, assertions, and new ANSI directives and operators. We will look at a variety of data structures including multi-dimensional arrays, arrays of pointers, data structures used for accessing command line arguments and environment variables, bit fields, unions, enumerations, and the use of typedefs for complex declarations. Students will learn how to use ANSI C function prototypes, write functions that take a variable number of arguments, use pointers to functions and tables of them, use setjmp and longjmp and handle signals.

ANSI C changes to all of these features will be presented throughout the course. Building on these constructs, the tutorial concludes with examples illustrating data encapsulation and dynamic binding, some basic techniques for object-oriented programming.

TUTORIALS ON TUESDAY 10th JULY

T1 Beyond 4.3BSD: Advanced Kernel Topics – Mike Karels & Marshall Kirk McKusick

Intended Audience: This tutorial is directed to systems programmers that have taken a course on 4.3 internals (such as the one being taught as part of the Summer Engineering Program at Oxford University July 2–6) or who have a year's experience working on the 4.3 kernel. *No license is required for this tutorial.*

This tutorial will present a detailed discussion of several topics that have not been covered in depth in recent 4.3 internals tutorials. In particular, it will emphasise changes to the system that are available in the 4.3BSD Tahoe release or those that are being developed for a future BSD release. The tutorial will cover four major topic areas. *First* will be an overview of the revised internal structuring of the networking and the ongoing development of OSI protocol support. *Second* will be a description of the four major changes in the 4.3BSD Tahoe release: a kernel memory allocator, disk labels, a kernel debugging facility, and file system modifications to support Gigabyte disks. *Third* will be an overview of the changes being made to support the POSIX P1003.1 interface including job control and a new terminal line discipline. *Fourth* will be other system changes in progress including the vnode-like file system interface, the file system reorganisation, and the internal kernel reorganisation. Presentations will emphasise system organisation, data structure navigation, and algorithms.

T2 Programming with the X Toolkit Intrinsics – Paul E. Kimball

Intended Audience: Programmers who are new to X Toolkits or interested End-Users who want a better understanding of the technology. Attendees should have a good working knowledge of the X Window System Architecture, including the Xlib programming interface, or should attend the 'Introduction to X Concepts' Tutorial (M2). For the more advanced material, a good understanding of C language syntax and structures is required.

This course provides a step-by-step practical introduction to programming with X Toolkits based on the MIT X Toolkit Intrinsics. The X Toolkit Intrinsics are a significant enhancement to the X Window System standard. Shipped with X on the MIT tape, the Intrinsics provide facilities for constructing and employing workstation graphical user interface tools (widgets) in a consistent fashion, using object-oriented programming methodology. Widgets can be scroll bars, dialog boxes, buttons, etc. This tutorial will present a detailed overview of the Intrinsics, and will include a presentation of object-oriented programming principles as implemented in the package. The features of several commonly-available toolkits based on the X Toolkit Intrinsics (i.e. DEC windows, XUI, OSF/Motif, The Athena widget set, ATT's OPEN LOOK, GUI X-based Toolkit) will be compared and their practical use discussed. The latest R4 enhancements to the Intrinsics will also be covered.

T3 Unix on Modern Architectures – Curt F. Schimmel

Intended Audience: This tutorial is targeted at system programmers with 6 months or more of UNIX kernel internals experience. It is ideally suited for those who will be porting UNIX System V to a modern computer architecture in the future or those involved in the design of new computer architectures that need to support the UNIX operating system effectively. It is also ideal for anyone who wants to learn more about operating systems and modern computer architectures.

This intensive tutorial presents the issues involved with porting the UNIX operating system to modern computer architectures. Attendees an understanding of the design considerations modern architectures present to the operating system and will gain insight into the design of new architectures intended to support the UNIX operating system. Examples of modern RISC processors and the computer systems built around them are used to illustrate the concepts.

The *first* section of the course investigates the effects of various cache memory systems on the UNIX System V porting base. After an overview of cache system architecture is presented, four different cache

organisations ranging from pure virtual to pure physical caches are studied including the tradeoffs of each, the impact on the kernel, and how to modify the kernel to properly control the cache.

The *second* section presents tightly coupled, symmetric multiprocessors. This includes a discussion of the mutual exclusion, synchronisation, race conditions, and deadlock problems as they apply to the UNIX kernel. Several strategies for adapting the UNIX kernel to run on a multiprocessor are then presented, ranging from master/slave to multithreaded semaphore techniques, along with the tradeoffs of each approach.

The *third* section builds upon the first two by examining cache consistency in a multiprocessor system. An understanding of the cache consistency problems and the effects on the kernel is gained followed by an investigation of both hardware and software cache consistency algorithms for different cache organisations and multiprocessor kernel implementations.

The *final* section presents the differences between RISC Memory Management Units and more traditional style MMU's. This includes Translation Lookaside Buffer (TLB) management, referenced and modified bit handling, and TLB flushing and replacement techniques. Emphasis is placed on the effects on the kernel and the algorithmic changes needed.

T4 C++ Programming – Tom Cargill

Intended Audience: Attendees will gain an understanding of object-oriented programming and how it is accomplished in C++. Experience programming in C is assumed, as well as knowledge of ANSI C. Familiarity with object-oriented programming is not a prerequisite.

C++ is an extension of C that supports object-oriented programming. To use its new language features effectively programmers must understand how the goals of the object- oriented paradigm can be achieved in C++. The language features are presented in an order that starts by demonstrating improvements in standard procedural techniques and advances to object-oriented programming. The course then explores additional C++ constructs, their implementation, and guidelines for defensive programming. Throughout the course, extensive examples are presented which emphasise a practical approach to the language. The role of object-oriented programming and its benefits will be shown.

Procedural Abstraction – A Better C C++ is a 'better C'. Its advantages can be seen in programs that do not use object-oriented techniques. Some of the features that make C++ a better C go beyond what is found in ANSI C: Function Overloading, Default Arguments, Inline Functions.

Data Abstraction – Classes The class, an extension of C's struct, is the basic building block for encapsulation in C++. It is used to establish interface 'firewalls' between different parts of a C++ program: Classes, Data Initialisation, Constructors, Destructors, Member Functions, Access Control.

Object-Oriented Fundamentals The most important difference between C and C++ is inheritance: new classes may be built from previously defined ones. This is an essential step in learning object-oriented programming: Inheritance, Virtual Functions, Abstract Base Classes.

Pitfalls – Forewarned is Forearmed C++ has its fair share of pitfalls: Constructors; Destructors, Inheritance, Overloading, Header Files, Preprocessor.

Program Organisation The model for C++ is similar to C: Header Files, Type Safe Linkage, Makefiles, Linking with C Programs.

The Implementation of C++ Understanding its implementation will help programmers make better use of C++. All programs can be understood in terms of equivalent C programs.

UKUUG Summer Conference Programme

Wednesday 11th July

0900	Opening Address: Sunil K Das, UKUUG Chairman and Programme Director City University London Computer Science Department, UK
0930	Keynote Speech: Rob Pike, AT&T Bell Laboratories, New Jersey, USA
1030	**COFFEE**
1100	Multi-Processor Streams for Plan 9 and UNIX David L Presotto, AT&T Bell Laboratories, New Jersey, USA
1145	rc – A Shell for Plan 9 and UNIX Tom Duff, AT&T Bell Laboratories, New Jersey, USA
1230	**LUNCH**
1400	Variable-Size Arrays in C Dennis M Ritchie; AT&T Bell Laboratories, New Jersey, USA
1430	A New C Compiler Ken Thompson; ATT Bell Laboratories, New Jersey, USA
1500	Does C++ Really Need Multiple Inheritance ? Tom A Cargill; Independent Consultant, Colorado, USA
1530	**TEA**
1600	group: A Distributed Group Specification and Management Service Thomas J Bannon and Ivor P Page; University of Texas at Dallas, USA
1630	NFS: The Protocol is the Problem Jim Reid; Strathclyde University, Glasgow, UK
1700	UKUUG Business Meeting, BoFS and WiPS

UKUUG Summer Conference Programme

Thursday 12th July

0900	rcc – An Optimising C Compiler for the Motorola 88000 Ciaran O'Donnell; O'Donnell, Palaiseau, France
0915	Limits: A System for Resource Management under UNIX Greg Rose; Softway Pty Ltd, Sydney, Australia
0930	A Pageable Memory Based File System Marshall Kirk McKusick, Michael J Karels, Keith Bostic University of California, Berkeley, USA
1000	A New Framework for Device Support in Berkeley UNIX Chris Torek; University of Maryland, USA
1030	**COFFEE**
1100	Pictures of Programs Jon L Bentley; AT&T Bell Laboratories, New Jersey, USA
1145	Symphonic Emulation and the Ultravirtuoso Michael Hawley; MIT Media Laboratory, Massachusetts, USA
1230	**LUNCH**
1400	Foiling the Cracker: A Survey of and Improvements to Password Security Daniel V Klein; SEI - Carnegie Mellon University, Pittsburgh, USA
1430	UNIX and Supercomputers Greg Rose; Softway Pty Ltd, Sydney, Australia
1500	More Taste: Less Greed ? – Sending UNIX to the Fat Farm C H Forsyth; University of York, UK
1530	**TEA**
1600	The Case Against UNIX Standards Robert Swartz; Mark Williams Company, Illinois, USA
1630	Standards, Specifications and Open Systems Peter H Salus; Sun User Group, Boston, USA
1700	The Case For UNIX Standards A N Other; Unix International
1730	Standards Panel and BoFS

UKUUG Summer Conference Programme

Friday 13th July 1990

0900	XEUS: An Intelligent Terminal System Laszlo Biczok, Zoltan Dioszeghy and Kalman Szeker, Central Research Institute, Budapest, Hungary
0915	Developing Document Management Systems Using the Andrew Toolkit Martin D Beer; University of Liverpool, UK
0930	G3 – A Language for Typesetting Three Dimensional Graphics Andrei G Yaneff, Trevor I Fenner; University of London, UK
1000	Development of a Distributed Revision Control System Brian O'Donovan, Jane Grimson; Trinity College Dublin, Ireland
1030	**COFFEE**
1100	Large Scale Software Development – Its UNIX Problems & Connections Stuart I Feldman; Bell Communications Research, New Jersey, USA
1145	The UNIX System and Software Productivity Brian W Kernighan; ATT Bell Laboratories, New Jersey, USA
1230	**LUNCH**
1400	A High Capacity TCP/IP in Parallel Streams Ken Dove, Sequent Computer Systems, Oregon, USA
1430	Meshix: A UNIX-like Operating System for Distributed Machines Phil Winterbottom and Tim Wilkinson; City University London, UK
1500	Project Granta – The Cambridge University FDDI Network A W Morris; University of Cambridge, UK
1530	**TEA**
1600	Beyond UNIX – A True Distributed System for the 1990s Andrew S Tanenbaum, Robert van Renesse, Hans van Staveren, Gregory J Sharp; Vrije Universiteit, Amsterdam, The Netherlands
1645	Closing Address
	Reserve Paper Terminate – An Alternative to Kill Jason, Hollywood Movie Studios

CALL FOR PARTICIPATION
INTERNATIONAL WORKSHOP ON
UNIX-BASED SOFTWARE DEVELOPMENT ENVIRONMENTS

Hotel Grand Kempinski, Dallas, Texas, USA
16-18 January 1991

Co-sponsored by:
USENIX Association (USA)
SIGMA Project (Japan)

Many software development environments have been described, built, or used which are intended to operate atop the UNIX system. The goal of this workshop is to share information on what these systems look like, what problems were solved by using UNIX and what problems were caused by it. We expect strong representation from the Japanese SIGMA workstation project, which defines a national software engineering environment that uses UNIX as its base, as well as American and European academic and industrial organisation.

Participants will be selected by a program committee on the basis of submitted position papers. Attendance will be limited to 75 to encourage discussion. Meetings will include descriptions of important systems and presentations on particular technical points involving implementation and usage. Significant time will be set aside for panels and informal discussions of such topics.

Position papers will be evaluated by a program committee including researchers and practitioners from Europe, Japan, and the United States. Please send a 1-4 page position paper by **1 August 1990** to one of the co-chairs:

Noboru Akima
Sigma Project
5th Akihabara Sanwa Bank Building
3-16-8 Soto-Kanda, Chiyoda-ku
Tokyo, Japan 101

Stuart Feldman
Bellcore
445 South Street
Morristown, NJ 07962-1910
USA

Electronic versions may be mailed to **sdeconf@bellcore.com**

Relevant topics that might be addressed in the position paper include:

- Description of a significant system (by a designer or builder)
- Experience with using such a system
  - — novel tools or facilities offered by such a system
  - — evaluations of usage
  - — positive and negative experiences
- Experience with building such a system
  - — architectural considerations for a UNIX-based Software Development Environment
  - — advantages resulting from basing the system on UNIX
  - — problems (and solutions) encountered in designing and implementing such a system (e.g. file and database systems, networking and cooperation, scheduling and resource usage)

CALL FOR PAPERS
WINTER 1991
USENIX CONFERENCE

Dallas, Texas, USA
21-25 January 1991

USENIX seeks original papers which describe new and interesting work for the Winter 1991 Technical Conference. Papers which are accepted for this conference will be published in the conference proceedings and will be presented during the three days of technical sessions.

The previous conference had a theme which was retrospective in nature, so for this conference we once again look to the future. We would like to include papers that emphasise changes to operating systems, environments,... as we know them today. Thus, the theme is:

What's next: by the year 2010, evolution or revolution? UNIX derivative or Something Else?

Appropriate topics include, BUT ARE NOT LIMITED TO:

Operating systems of the future	
	Distributed Systems
	Real-time systems
	Object Oriented systems
	Fault Tolerant Systems
	Multiprocessor and Multicomputer Systems
	Workstation Systems
	Systems for Novel Architectures
Communications and Networking	
	Protocols
	Performance
	Administration
	Security
Applications	
	Databases
	Transaction Processing
	Arts and Social Applications
	Novel Application Areas
User Interfaces	
	Human Factors
	Graphics and Window Systems
	Graphical User Interfaces
Programming Environments and Languages	
Testing and Debugging	

All submissions will be considered, however thinly disguised product announcements are rarely accepted, nor are rehashes of previous papers.

We will require at least an abstract and an outline in a form that gives the committee confidence in the final paper. It will be possible to give greater weight to papers whose authors show by their references that they are aware of other work done in the field. It will also be easier to evaluate papers that tell the committee what conclusion will be drawn in the final paper.

A submission should be 2-3 typewritten pages and include the following:

1. Author names, addresses, telephone numbers and E-mail addresses.
2. Abstract: 100-300 words (half a page) to be included in the final paper.
3. Outline: 1.5 - 3 pages, giving the major headings of the paper, plus a few sentences per section that give the major points that will be covered in that section in the final paper.
4. References: List a few key references to other work on the topic, preferably to other people's work. This is meant to convey to the committee that you are aware of related work and not merely reinventing the wheel.

The following is a sample outline, which is not necessarily appropriate for all papers, but which illustrates the important topics. The purpose of this outline is to convince the committee that something interesting and important will be said in the final paper.

INTRODUCTION

Background

Introduce the problem to be solved; why is it important?

Reference previous work; make sure the committee knows the wheel is not being reinvented

HOW WE SOLVED THE PROBLEM

More details on the problem and its issues.

Design decisions and tradeoffs, and why they were made.

Implementation issues.

EVALUATION

Data, on performance, effort required.

How well does it work?

What would we do differently?

If it failed, why? and what can we learn from it?

CONCLUSION

Summarise the paper, emphasising why it is important, and what was learned.

REFERENCES

Please submit abstracts with outlines 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 13 August 1990. Abstracts received after this deadline will not be considered. Notification of acceptance or rejection will be made by 3 October 1990. Final camera-ready papers are due by 14 November 1990.

The final paper should retain the 100-300 word abstract, add illustrations (where needed), and citations to relevant literature. Only previously unpublished submissions will be considered. Final papers should contain 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. For authors without access to a laser printer or typesetter, appropriate facilities will be provided by the program chair.

Please send the hard copy of your submission to:

Lori S. Grob
Dallas Conference
Usenix Association
2560 9th St.
Suite 215
Berkeley, CA 94710, USA

To request additional information, please contact:

Lori S. Grob
Dallas USENIX Technical Program
Chorus systemes
6, avenue Gustave Eiffel
F78182 Saint-Quentin-en-Yvelines CEDEX
France

Internet: dallas-conf@usenix.org
UUCP: uunet!usenix!dallas-conf

Telephone: +33 (1) 30 57 00 22
Fax: +33 (1) 30 57 00 66

Please include your physical and electronic mail address in all correspondence.

Program Committee:

Lori S. Grob, Chair	-	Chorus systemes
Steve Bourne	-	Sun Microsystems
Marc Donner	-	IBM Research
Tom Duff	-	AT&T Bell Laboratories
Jan Edler	-	New York University
Michel Gien	-	Chorus systemes
Barry Gleeson,	-	Unisys Corp.
Trent R. Hein	-	University of Colorado, Boulder
Andrew Hume	-	AT&T Bell Laboratories
Michael J. Karels	-	University of California, Berkeley
Deborah K. Scherrer	-	mt Xinu
Melinda Shore	-	mt Xinu
Max Meredith Vasilatos	-	Open Software Foundation

CALL FOR PAPERS
MACH WORKSHOP

Radisson Hotel, Burlington, VT, USA
October 4-5, 1990

The use of Mach in what has traditionally been the UNIX community is growing as DARPA and OSF increase their Mach-related activities and more vendors are supporting Mach on a variety of platforms. Because Mach itself is changing rapidly and there hasn't been any convenient mechanism for communication among developers, the USENIX Association is pleased to sponsor its first Mach workshop, in which researchers, vendors, and users can share results of Mach-related development work and status reports on work-in-progress.

The workshop will be oriented towards those who have actually worked with Mach or have done Mach-based applications development, and will not be tutorial in nature. The program will consist largely of refereed papers and panels. Abstracts of 350-700 words should be sent to the program chair at the address below (those submitting hardcopy abstracts should send five copies). The deadline for submissions is **22 June 1990**. All submissions will be acknowledged. Authors will be notified by 20 July 1990, and full papers will be required by 27 August 1990.

For further information about the workshop, contact the program chair:

Melinda Shore
mt Xinu
2560 Ninth St., Suite 312
Berkeley, CA 94710, USA

+1 415 644-0146
shore@mtxinu.com

Program Committee:

Alan Langerman	Encore Computer Corporation
Douglas Orr	Carnegie-Mellon University
Homayoon Tajalli	Trusted Information Sys.
Avadis Tevanian	NeXT, Inc.

CALL FOR PAPERS
LARGE INSTALLATION
SYSTEMS ADMINISTRATION CONFERENCE

Colorado Springs, CO, USA
17-19 October 1990

The Fourth USENIX Large Installation Systems Administration Conference will be held in Colorado Springs, Colorado on 18-19 October 1990. A tutorial program will be offered in conjunction with the conference on 17 October.

The program committee will be reviewing papers submitted on subjects including but not limited to:

Automation of tasks
Network management
Distributed services
System backup
File and data archiving
Electronic mail
Security
Account/user management
Accounting
USENET News/Notes
Performance monitoring and tuning
Configuration management
Vendor issues
Distributed administration

We are especially interested in papers which provide freely available or fully described solutions to existing problems, or which in some way advance the state of the art. Administration of installations which are "unique" in any fashion (size, hardware, number of users, security level, etc.) is also of special interest.

Papers should be from 5 to 15 pages in length, including diagrams, figures, etc. Papers should include a brief description of the site, an outline of the problem and issues, and a description of the solution. We prefer, but do not require electronic form, e.g., *nroff/troff*, TeX, Postscript, etc.

Workshop proceedings will be distributed to all the attendees and are also available after the Conference from the USENIX Association.

The deadline for submission of papers is **25 July 1990**.

For further information about the conference, contact the program chair:

Steve Simmons
Industrial Technology Institute
2901 Hubbard Road
Ann Arbor, MI 48109, USA

+1 313-769-4086
scs@iti.org

SUBSCRIPTION ORDER FORM

CONFERENCE & WORKSHOP PROCEEDINGS

Please enter my one-year subscription to the 1990 USENIX Conference & Workshop Proceedings, which include:

Washington, DC Conference - January 1990

C++ Conference - April 1990

Anaheim Conference - June 1990

UNIX Security Workshop - August 1990

Mach Workshop - October 1990

Large Installation Systems Administration IV Conference - October 1990

COST: $110.00

Outside U.S.A. and Canada? Add $30 for surface postage.

PAYMENT OPTIONS

☐ Check enclosed payable to USENIX Association. ☐ Purchase order enclosed.

☐ Please charge my: ☐ Visa ☐ MasterCard

Account # _____ Exp.Date _____

Signature _____ _____

Overseas? Please make your payment in U.S. currency by one of the following:

* Charge (Visa, MasterCard, or foreign equivalent)
* International postal money order
* Check - issued by a local branch of a U.S. Bank

Name _____

Address _____

City _____ State/Country _____ Zip/Postal Code _____

Please mail this order form to:

USENIX Association
2560 Ninth Street
Suite 215
Berkeley, CA 94710

This offer is good through December 31, 1990

Calendar of UNIX Events

This is a combined calendar of planned conferences, workshops, or standards meetings related to the UNIX operating system.

If you have a UNIX related event that you wish to publicise then contact either John Quarterman at *jsq@longway.tic.com*, Susanne Smith at *sws@calvin.wa.com* or Alain Williams at *addw@phcomp.co.uk* giving brief details as you see below. Don't rely on someone else to send the details – do it yourself.

Abbreviations:

APP	Application Portability Profiles
C	Conference
CT&LA	Conformance Testing & Laboratory Accreditation
S	Symposium
T	Tradeshow
U	UNIX
UG	User Group
W	Workshop

1990

mon days	conference	location
Jun 8	IEEE/Posix/NLUUG C	Utrecht, Netherlands
Jun 11-15	USENIX	Marriott Hotel, Anaheim, CA, USA
Jun 11-15	ISO WG15 (POSIX)	Paris, France
Jun 19-21	EMAP T	London, UK
Jul 9-11	15th JUS S	JUS, Tokyo, Japan
Jul 9-13	UKUUG C	London, UK
Jul 16-20	IEEE 1003	Danvers, MA, USA
Jul 17-19	UniForum	Washington, DC, USA
Jul 31-Aug	2	IETF
Aug 20-23	Interex	Boston, MA, USA
Aug 27-28	Security	Portland, OR, USA
Sept 3-7	DECUS Europe Symposium	Cannes, France
Sept 4-6	GUUG C	Wiesbaden, Germany
Sept 20-21	Sun UK UG C	Edinburgh, UK
Sept 25-28	AUUG Conference	Southern Cross, Melbourne, Australia
Oct 3-5	UNIX Solutions T	Anaheim, California, USA
Oct 4-5	USENIX W -MACH	Burlington, Vermont, USA
Oct 8-12	InterOp 90 ACE	San Jose, CA, USA
Oct 15-19	IEEE 1003	Seattle, WA, USA
Oct 17-19	Large Installation Sys. Admin.	Colorado Springs, CO, USA
Oct 22-25	IPA C	Jerusalem, Israel
Oct 22-26	EUUG C	Nice, France
Oct 31-Nov 1	UNIX EXPO	New York, NY, USA
Nov 1	NLUUG C	Open Systems, Ede, Netherlands
Nov 5-9	10th Internat'l C on CC	ICCC, New Delhi, India
Nov 15	POSIX APP W	NIST, G, MD, USA
Nov 15-16	16th JUS Symposium	Osaka, Japan

Dec 2-5	SunUG CT	San Jose, USA
Dec 4-5	JUS UNIX Fair '90	Tokyo, Japan
Dec 10-12	Sinix C, Unix Asia '90	Singapore
Dec 10-14	DECUS S	Las Vegas, NV, USA
Dec 13-16	Sinix T, Unix Pavillion '90	Singapore
Dec 17-19	UKUUG C	Cambridge, UK

1991

Jan 7-11	IEEE 1003	New Orleans, LA, USA
Jan 16-18	Software Devel. Environments	Grand Kempinski, Dallas, TX, USA
Jan 21-25	USENIX	Grand Kempinski, Dallas, TX, USA
Jan 22-25	UniForum	Infomart, Dallas, TX, USA
Feb	Unix in Government C&T	Ottawa, ON, Canada
Feb 18-22	DECUS S	Ottawa, Canada
Apr 10-12?	3rd pan-European Sun UG conference	?, UK
May	U 8x/etc C&T	/usr/group/cdn; Toronto, ON, Canada
May 6-10	DECUS S	Atlanta, GA, USA
May 20-24	EUUG	Tromso, Norway
Jun/Jul	UKUUG C	Liverpool, UK
Jun 10-14	USENIX	Opryland, Nashville, TN, USA
Sept 16-20	EUUG	Budapest, Hungary
Dec	UKUUG C	Edinburgh, UK
Dec 9-13	DECUS S	Anaheim, CA, USA

1992

Jan 20-24	USENIX	Hilton Square, San Francisco, CA, USA
Jan 21-24	UniForum	Moscone Center, San Francisco, CA, USA
Spring	EUUG	Jersey, UK
May 4-8	DECUS S	Atlanta, GA, USA
Jun 8-12	USENIX	Marriott, San Antonio, TX, USA
Autumn	EUUG	Amsterdam, Netherlands

1993

Jan	USENIX	Town & Country, San Diego, CA, USA
Mar 2-4	UniForum	Washington, DC, USA
Jun 21-25	USENIX	Cincinnati, OH, USA

Organising Bodies

NIST/NBS/POSIX
Roger Martin
National Institute of Standards
and Technology
Technology Building, Room B266
Gaithersburg, MD 20899, USA
+1-301-975-3295
+1-301-975-3295
rmartin@swe.icst.nbs.gov

IEEE Computer Society
P.O. Box 80452
Worldway Postal Center
Los Angeles, Ca. 90080, USA

/usr/group
4655 Old Ironsides Drive, Suite 200
Santa Clara, California 95054, USA
+1-408-986-8840
+1-408-986-1645 fax

/usr/group/cdn
241 Gamma St.
Etobicoke, Ontario M8W 4G7
Canada
+1-416-259-8122

Tracy MacIntyre
Exhibition Manager
EMAP International Exhibitions Ltd.
Abbot's Court
34 Farringdon Lane
London EC1R 3AU
United Kingdom
+44-1-404-4844

AUUG
P.O. Box 366
Kensington
N.S.W. 2033
Australia
uunet!munnari!auug
auug@munnari.oz.au
+61 3 344 5225

AMIX, c/o IPA
P.O. Box 919
Ramat-Gan
Israel, 52109
+972-3-715770
+972-3-715772
amix@bimacs.bitnet
amix@bimacs.biu.ac.il

Japan UNIX Society (JUS)
#505 Towa-Hanzomon Corp. Bldg.
2-12 Hayabusa-cho
Chiyoda-ku, Tokyo 102
Japan
bod%jus.junet@uunet.uu.net
+81-3-234-5058

UNIX Fair '88 Association
1-1-1 Hirakawa-chu,
Chiyoda-ku, Tokyo 102
Japan

Singapore Unix Association - Sinix
20 Bideford Road #11-05
Wellington Building
Singapore 0922
+65 734 3256

DECUS US Chapter
219 Boston Post Road, BP02
Marlboro, Massachusetts 01752-1850
USA
+1-617-480-3418

USENIX Association Office
2560 Ninth St., Suite 215
Berkeley, CA 94710
USA
+1 415 528 8649
office@usenix.uucp

National Expositions Co., Inc. (UNIX EXPO)
15 West 39th Street
New York, NY 10018
USA
+1-212-391-9111
fax: +1-212-819-0755

Sun UK User Group
Sue Crozier
Sun Microsystems, UK
+44 276 20980

USING
P.O. Box 1077
Lisle,
Illinois 60532, USA

UniForum NZ Secretariat
PO Box 585
Hamilton
New Zealand

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

USENIX Column

Donnalyn Frey
donnalyn@frey.com

Frey Communications
Fairfax, VA USA

Donnalyn 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.

USENIX Association News for EUUG Members

1990 C++ Conference

The Second USENIX C++ Conference was held in April in San Francisco, CA and drew over 550 attendees. The keynote address was given by Adele Goldberg. Dr. Goldberg discussed the process of object oriented design and looked at C++ from the perspective of the programmer learning C++ from an object oriented background (Smalltalk) rather than a C++ background. The conference also featured an invited paper by Bjarne Stroustrup on Exception Handling for C++, a day of tutorials, and Birds of a Feather Sessions. To order the proceedings, please use the USENIX order form enclosed in this issue.

The 1990 Summer USENIX Association Conference

Dennis Ritchie, of AT&T Bell Laboratories and co-author of the UNIX operating system, will present the keynote address at the USENIX Association 1990 Summer Technical Conference and Exhibition on June 11 - 15 at the Anaheim Marriott Hotel and Convention Center in Anaheim, California. Dr. Ritchie will be reflecting on "What Happens When Your Kid Turns 21?," and will show what has been described as "a completely different home video." This conference marks the fifteenth anniversary of the USENIX Association technical conferences.

Technical Exhibition

The Technical Exhibition will include over 65 hardware and software companies who will be displaying their latest technical innovations to a high focused end user community. Some of the participating exhibitors to date include IBM, Data General, AT&T, Intergraph, Sequent, Hewlett-Packard/Apollo, Digital Equipment Corp., Sequoia, Amdahl, Sun Microsystems, UUNET Communications, UNIX International, Open Software Foundation, NeXT, and HCR Corp. The Association is again sponsoring an Ethernet network, allowing exhibitors to display the networking capabilities of their products. The exhibitors will also have access to an FDDI network. The exhibition will be open Tuesday afternoon, Wednesday, and Thursday.

Technical Program

The upcoming Technical Program will emphasise retrospectives, analyses of tradeoffs, and critical thinking in today's UNIX environment. Papers presented at the conference will discuss new approaches in distributed systems, operating systems, file systems, applications, languages, lessons learned in computing, performance, windowing, and shared libraries. Conference sessions run on Wednesday, Thursday, and Friday. The tutorial program on Monday and Tuesday will feature new tutorials on AT&T's Open Look graphical user interface and the TCP/IP networking protocols. Popular repeat

tutorials will include Mach, 4.3BSD UNIX, OSF/Motif, C++, Postscript programming, OSI, MIT X Window System, X Toolkit intrinsics, and more.

Concurrent Sessions

A second track of the conference sessions will once again feature informal talks on subjects such as computer generated music -- Peter Langston of Bell Communications Research and Mike Hawley of MIT Media Lab on how computers make music, and how are they being used in music production, arrangements, and composition. The concurrent sessions will also include Andrew Hume repeating his popular talks on regular expressions and make; Craig Hunt, of the National Institute of Standards and Technology discussing TCP/IP system administration; and Rob Kolstad of Sun Microsystems moderating a system administration problem solving panel.

The Terminal Room and FaceSaver at the Conference

The USENIX Association will host a Terminal Room which has modems for a dialout connection. Conference attendees may log onto their home or work systems to read their mail and contact other UNIX users directly from the conference. Electronic mail should be sent to attendees with the address Your_Name@conference.usenix.org.

The FaceSaver will again return to the conference. Faces will be saved and attendees will get a page of sticky labels with their faces addressing information. The FaceSaver data will again go to the UUNET FaceServer.

1990 USENIX Workshops

Upcoming workshops include:

UNIX Security on August 27 - 28 at the Marriott Hotel in Portland, Oregon

Mach on October 4 - 5 at the Radisson Hotel in Burlington, Vermont

Software Development Environments in UNIX on January 16 - 18, 1991 at Grand Kempinski Hotel in Dallas, Texas cosponsored with the SIGMA Project of Japan. Contact the USENIX conference office for information on these workshops.

ISO Monitoring

The Association, in conjunction with the EUUG, is continuing to co-sponsor Dominic Dunlop to monitor the ISO standards meetings. Both EUUG and the USENIX Association publish Dominic's reports in their newsletters.

New Board of Directors

The USENIX Association has elected a new Board of Directors for 1990 - 1992. Their terms will begin after the Anaheim Conference.

Marshall Kirk McKusick of the University of California at Berkeley, President;
Michael D. O'Dell of Bellcore, Vice-President;
Rob Kolstad of Sun Microsystems, Secretary;
Sharon Murrel of AT&T Bell Laboratories, Treasurer;
Rick Adams of UUNET Communications Services, Director;
Ed Gould of Mt. xinu, Director;
Evi Nemeth of University of Colorado at Boulder, Director; and
Barry Shein of Software Tool & Die, Director.

Speakers Bureau

A Speakers Bureau was recently begun to provide a forum for people with expertise in various areas of UNIX and advanced computing to share their knowledge with educational groups, including high schools, colleges, universities, and local user groups. Potential speakers have been encouraged to contact the USENIX office for more information.

Further Information on Conferences and Workshops

If you need further information regarding USENIX conferences or workshops, contact the USENIX Conference Office at

22672 Lambert Street
Suite 613
El Toro
CA 92630
USA

Email to judy@usenix.org
or
{uunet,ucbvax}!usenix!judy
Tel: +1 714 588 8649
FAX: +1 714 588 9706

Further Information about the USENIX Association

If you would like information on membership, or would like information on ordering USENIX publications (proceedings, manuals, the technical journal, Computing Systems, or the Association's newsletter, ;login:, please contact the USENIX Association Executive Office at

2560 Ninth Street
Suite 215
Berkeley
CA 94710
USA

Email to office@usenix.org
Tel: +1 415 528 8649
FAX: +1 415 548 5738

Dear EUUG Member,

As a member of EUUG, you have been given a special opportunity to subscribe to **UNIX Today!** Subscriptions to this biweekly publication are **FREE** to qualified applicants. **UNIX Today!** is the only newspaper in Europe dedicated to serving your UNIX informational needs.

Send in this qualification form to the address listed or fax it. If you qualify, your subscription will begin in 4-6 weeks. I look forward to hearing from you.

H. Newton Barrett, Publisher

DON'T DELAY

RETURN RESPONSES TO:

UNIX Today!
Circulation Dept.
P.O. Box 2170
Manhasset NY 11030

OR, FAX YOUR COMPLETED FORM TO
(516) 562-5468

UNIX® Today!

CMP Publications, Inc. 600 Community Drive • Manhasset, NY 11030 (516) 562-5000

86

A. Mr. B. Ms. 1st initials | Last Name | Title

Company

Street Address

Street Address/Mail Stop

City | Postal Code

Country | Telephone

If you would prefer delivery to your home, please complete home address information below. Company name and address are still required to qualify. Please allow six weeks for processing

Form 04 84 5

Home Address (Street/Mail Stop)

City | Postal Code

New Subscription | Renewal | Change of Address

All questions must be answered. Incomplete forms cannot be processed. The publisher will only accept those applications which meet the qualifications criteria for the publication.

SIGNATURE IS REQUIRED FOR SUBSCRIPTION TO BE PROCESSED

Signature _____ Date _____

1. I want to receive (continue to receive) UNIX Today!
YES **NO**

2. IS YOUR ORGANIZATION PRIMARILY: (Select only one) 73

END-USER OF UNIX-BASED COMPUTER EQUIPMENT

A. GOVERNMENT (Federal, State, Municipal, Military)
B. FINANCE (Banking, Insurance, Real Estate, Securities, Credit)
C. MANUFACTURING (Non-Computer Manufacturer)
D. UTILITIES (Communications, Electric, Oil, Gas, etc.)
E. R&D LABORATORIES
F. EDUCATION (Colleges, Universities, other Educational Institutions)
G. WHOLESALE/DISTRIBUTION
H. RETAIL/HOSPITALITY
I. MEDICAL RESEARCH/HEALTH CARE
J. PROFESSIONAL SERVICES (Consulting, Contract Services, Recruiting)
K. TRANSPORTATION

RESELLER/DEVELOPER/MANUFACTURER OF UNIX-BASED PRODUCTS OR SERVICES

1. RESELLER OF UNIX-BASED HARDWARE OR SOFTWARE (e.g. VAD, VAR, Systems House, Dealer, Distributor, Developer of Turnkey Applications/Systems)
2. DEVELOPER OF UNIX-BASED APPLICATIONS OR SYSTEMS SOFTWARE (e.g. Word Processor, CAD/CAM, DBMS, Operating Systems)
3. MANUFACTURER OF UNIX-BASED COMPUTER SYSTEMS OR RELATED HARDWARE

Z. Other _____ *(please specify)*

3. I AM PERSONALLY INVOLVED IN THE SPECIFICATION, SELECTION, OR APPROVAL OF UNIX-BASED HARDWARE OR SOFTWARE PRODUCTS: (Select only one) 81

A. Yes B. No

4. WHICH OF THE FOLLOWING BEST DESCRIBES YOUR JOB FUNCTION? (Select only one) 85

CORPORATE MANAGEMENT

1. Executive Management (President, Chairman, Owner, Partner, Principal)
2. Finance/Administrative Management (VP/Director/Manager of Finance, Purchasing, Administration)
3. Sales and Marketing Management (VP/Director/Manager of Sales, Marketing, Research, Planning)

COMPUTER SYSTEMS/OPERATIONS MANAGEMENT/STAFF

4. Computer Systems/Operations Management (VP/Director/Manager MIS, Operations, Systems Integration, Software/Hardware Design)
5. Computer Systems/Operations Professional/Staff (MIS, EDP, Programming, Purchasing, Systems Analysis, Computer Specialist)

TECHNICAL MANAGEMENT/STAFF

6. Technical Management (VP/Director/Manager of Engineering, Manufacturing, Quality Assurance, Product Development)
7. Technical Staff (Engineering, Manufacturing, Technical Support, Systems/Software Design, Quality Assurance, Systems Integration)
8. Consultants
9. Educators
99. Other _____ *(please specify)*

5. AMOUNT OF ALL COMPUTER-RELATED EXPENDITURES TO BE MADE BY MY ORGANIZATION (or by my client organization(s) if I am a Reseller or Consultant) IN THE NEXT 12 MONTHS: (Please choose closest U.S. dollar amount; select only one) 78

A. Up To $10,000
B. $10,001-$50,000
C. $50,001-$100,000
D. $100,001-$500,000
E. $500,001-$1 million
F. Over $1 million-$5 million
G. Over $5 million
Z. None of the Above

6. AMOUNT OF EXPENDITURES FOR UNIX-BASED PRODUCTS ONLY TO BE MADE BY MY ORGANIZATION (or by my client organization(s) if I am a Reseller or Consultant) IN THE NEXT 12 MONTHS: (Please choose closest U.S. dollar amount; select only one) 79

1. Up To $10,000
2. $10,001-$50,000
3. $50,001-$100,000
4. $100,001-$500,000
5. $500,001-$1 million
6. Over $1 million-$5 million
7. Over $5 million
9. None of the Above

7. SIZE OF YOUR ORGANIZATION BY NUMBER OF EMPLOYEES: (Select only one) 76

A. 20 or less
B. 21-100
C. 101-500
D. 501-1000
E. 1001-2000
F. More than 2000

8. WHAT IS THE APPROXIMATE NUMBER OF UNIX-BASED DESKTOPS (Terminals, Workstations or Personal Computers) AT YOUR LOCATION: (or at all your clients' locations if you are a Reseller or Consultant) (Select only one) 88

1. 1-5
2. 6-10
3. 11-20
4. 21-50
5. 51-100
6. 101-500
7. 501-1000
8. Over 1,000
99. None of the above

9. IN THE NEXT 12 MONTHS, I WILL BE INVOLVED IN THE SELECTION OR PURCHASE OF THE FOLLOWING PRODUCTS: (Tick all that apply) 75

1. Operating Systems
2. Systems/Utility Software
3. Database Management Systems
4. Programming/4gl Languages
5. Application Development Tools
6. Communications Software
7. Applications Software
8. LANs/File Servers
9. Modems/Multiplexers
10. Mass Storage Devices
11. Laser Printers
12. Dot-Matrix Printers
13. Plotters
14. Display Terminals
15. Workstations
16. Personal Computers
17. Multiuser Microcomputers
18. Minicomputers
19. Mainframes
20. Add-in Memory
21. Graphic Cards
22. Disk Cache Controllers
23. Monitors
24. Hardware/Software Maintenance
25. Training
99. None of the Above

10. THE UNIX-BASED PRODUCTS I AM INVOLVED WITH ARE USED FOR THE FOLLOWING APPLICATIONS: (Tick all that apply) 89

1. Business (word processing, accounting, financial, MIS/EDP or other commercial applications)
2. Communications (telecommunications, data communications, networking)
3. Engineering/Scientific (engineering calculations, CAD/CAE, CASE, medical systems, R&D, imaging)
4. Industrial (robotics, CIM, CAM, industrial automation, process control)
5. Educational
6. Military/Aerospace/Government
99. Other _____ *(please specify)*

Call Doc Strange

Colston Sanger
doc.strange@gid.co.uk

GiD Ltd

with a little help from 'Cheery Bye' Neil Todd

Colston Sanger has left the Olivetti International Education Centre. He is now a sort of senior consultant/tea boy with GiD Ltd and a visiting lecturer in the Faculty of Engineering, Science and Mathematics at Middlesex Polytechnic.

Managing Users

This issue's topic is managing users — you know, *them*, the ones who cause all the trouble, but who also pay the bills. More precisely, the topic is how to assign login names and how to nudge them gently into groups, particularly across distributed filesystems.

Assigning *gid*s and *uid*s

While it is sometimes sorely tempting to regard all your users as simply *them*, on closer inspection they will often seem to fall fairly naturally into classes or groups. There's the "I'm a programmer, I've got magic fingers" group, the "I'm too important or too busy to read that" group, the "Oh, is that what it does" group...

Seriously, why not group them by function or by the need to share information? In a university, the obvious groups are likely to be staff, research or postgraduate students, and undergraduates. You might want to divide these further by department. You might have `psych_staff`, `soc_staff` and `comp_sci_staff`, for example, for psychology, sociology and computer science staff respectively. Similarly, you might want to divide the postgraduate and undergraduate students by department, by course or by year. In a commercial organisation, the groups might be `wordpro`, `accounts`, `personnel` and `sales`, where `sales` might again be further divided by region.

When assigning numeric *gid*s, it makes sense to increment by more than simply the next available number. For example, you might assign the numeric *gid* 100 to the `wordpro` group, 200 to `accounts`, 300 to `personnel` and so on. Then, when you come to assigning numeric *uid*s, `sharon` and `tracy` in the word-processing department can be numeric *uid*s 101 and 102, `kevin` in accounts can be 201 and `sean` in personnel can be 301. The advantage of this scheme is the extra level of redundancy it provides: if your `/etc/passwd` file should one day 'accidentally disappear' without trace or backup, then you have a better chance of sorting out what belongs to whom from the numeric *gid*s and *uid*s stored in the i-nodes (as shown by an `ls -l`) than if you had just assigned *gid*s and *uid*s randomly.

In System V, users are only ever a member of one group — the group to which you as system

manager assign them when you add them as a user. If they need to share information with the members of another group, probably the easiest and most secure way to do it is to use the `newgrp` shell built-in command to temporarily change group to the other group.

For this to work, however, you have to set things up properly. If you look up the manual page for `/etc/group` you will see that it says that the fourth field in each line is 'a comma-separated list of all users allowed in the group'. It's not actually — or else the wording has always been ambiguous and confusing (to me). What the fourth field really is, is a list of users who are authorised to use the `newgrp` command to change to that group.

Let me demonstrate. Assume you are a member of the `staff` group, but that sometimes (for whatever reason) you want temporarily to become a member of the `student` group. Here are the relevant entries in `/etc/passwd` and `/etc/group`:

```
you:x:204:200:Member of staff:/u/staff/you:
```

(This machine has a shadow password file.)

```
staff::200:
student::300:
```

You try a `newgrp` command:

```
$ id
uid=204(you) gid=200(staff)
$
$ newgrp student
newgrp: Sorry
```

Doesn't work. Now add yourself as a member of the `student` group in `/etc/group`:

```
staff::200:
student::300:you

$ id
uid=204(you) gid=200(staff)
$
$ newgrp student
$
$ id
uid=204(you) gid=300(student)
$
$ newgrp
$
$ id
uid=204(you) gid=200(staff)
```

And back again.

I suppose I ought to mention that Berkeley UNIX has the concept of a group of groups. If you use PC-NFS, however, don't be caught by the 'gotcha' that you are only ever a member of your base group (the one defined in `/etc/passwd`) regardless of whether or not you are filesharing with a BSD machine.

Naming schemes

There is, of course, a step previous to all this: what if you have more than one clever `trevor` in your organisation? In any organisation of more than half a dozen people it's a virtual certainty that there will be some who share the same first name. In recognition of this potential problem, some system managers use the initial letters of users' first, middle and last names for login names, perhaps with a common or group prefix. Others don't use personal login names at all: instead, they use logins by job function — `wordpro1`, `wordpro2`, for example. To my mind, though, that's a bit impersonal. If you're trying to encourage people to give up their fear and loathing of computers, it's not exactly helpful. It could also make it more difficult to spot unauthorised use of a login. Certainly in an office environment, there's a lot to be said for using login names that correspond to the names or initials that are used on existing distribution or circulation lists. Whatever you decide, the point is it's worth thinking about a login naming scheme from the outset.

Where to put them

Once you have sorted out the groups, the next step is to decide where to put them. Again, it makes sense to create separate disk partitions for each group, mounting one as `/u/wordpro`), for example, another as `/u/accounts`.

What do you gain by this? Well, you now have the potential to spread your users' files across a

number of disk partitions. It means you can ensure that greedy users in one group cannot hog large amounts of disk space to the detriment of other groups (the downside is that you have to make a reasonable guess as to how large that group's partition needs to be, and you lose the automatic and dynamic allocation of space between groups as users create and delete files). You also have the possibility of load balancing across disks and disk controllers, and can dump or backup the different groups at different frequencies from each other.

Moreover, if you use a distributed filesystem such as NFS, you can restrict the files you wish to export much more easily (remember that export restrictions in NFS are on a per partition basis), thus your fileserver can, for example, export undergraduates' login directories to those machines on which undergraduate logins are permitted, while at the same time denying undergraduate access to staff or postgraduate login directories (which are presumably exported to other machines).

Sharing files between machines

Distributed filesystems are all the rage these days. There are two that are generally available: NFS and RFS. NFS works in a UNIX or heterogeneous environment, whereas RFS is for UNIX only. Since they are both available in System V Release 4.0 (implemented under the Virtual File System — VFS), it's maybe worth discussing how they deal with with user and group ids mapped across the entire distributed filesystem.

NFS assumes that you have a flat namespace (strictly, *uid* space) across all machines. That's to say, the assumption is that files with a *uid* of **n** on my machine are owned by the same person as files with a *uid* of **n** on your machine — or, to put it another way, if I can become the user with *uid* **n** on my machine and I can access your machine *via* NFS, then I own all files with *uid* `n` on your machine. The only mapping that NFS will do for you is to map requests that come with a *uid* of `root` (0) into requests coming from the user `nobody` (typically -2 or 32767), thus ensuring that `root` on one machine cannot operate with superuser privileges on another machine. That's it.

RFS, on the other hand, provides you with the ability to map users and groups globally or on a per machine basis. Under RFS, if you never set up mapping, all remote users will be mapped to a special guest id, represented by an id number that is one higher than the maximum allowed on your system. By default, the maximum number of users and groups on a system is 60000, so the special guest id number is 60001. When a remote user does an `ls -l` of your files, they will appear to be owned by *uid* 60001 or 60002. The 60001 means the file was created by a remote user, whereas the 60002 means the file was created by one of your local users and, therefore, remote users can only access the file if they have `other` permissions.

User mapping increases the power and flexibility of RFS. For example, you may want to map some or all remote users into particular local users' permissions. If you are the administrator of several machines, you may want to map all `root` logins together across the machines so that you will be able to modify any remote resources mounted on any machine you are working from.

Alternatively, you may want to set up a group of machines to have the same `/etc/passwd` and `/etc/group` files so that when a user creates a file he or she maintains sole ownership of it, regardless of where the file actually resides. With this transparent mapping, you could share resources that require a consistent view of user ownership. For example, you could share your `/usr/mail` directory, mount it on `/usr/mail` on other machines and have one mail directory for the entire set of machines.

Or you may want to map users from one machine in a different way than users from another machine. For example, you may want to map all users from one machine into *uid* 600, from another machine into 700 and from another into 800 so that you can monitor which remote machine's users are creating files within your resources.

How to set up user mapping in RFS

You will need to create a set of 'mapping translation tables'. These tables will be used by your machine to process requests from remote users for access to resources belonging to you that are mounted on their machines.

The command to create translation tables is `idload`. When you run `idload` without any options it does the following:

- reads the rules files to determine how you want to set up mapping
- reads the `/etc/passwd` and `/etc/group` files on your machine and copies those from other machines as required
- creates translation tables.

`idload` has two options: `-n` lets you do a trial run without actually changing the mapping; and `-k` lets you see the mapping that is currently in effect.

You will need three sets of files, as follows. First, you need rules files, *i.e.*, the files `uid.rules` and `gid.rules` located in the `/usr/nserve/auth.info` directory. The information you add to these files tells the `idload` command how to create the translation tables. Second, you need the `/etc/passwd` and `/etc/group` files on your machine. Although you don't modify these files, you will need the information in them. For example, if you map by local name, these files are read to translate the names to numeric *ids*. Third, you need remote `passwd` and `group` files. Because mapping translation tables are sets of numbers, if you want to map a remote user by name, you must have a copy of the `passwd` and `group` files from the remote user's machine. These files should be placed in the `/usr/nserve/auth.info/`*domain/nodename* directories, where *domain* and *nodename* are replaced by the remote machine's RFS domain and nodenames respectively.

To make the discussion more concrete, here is an example `uid.rules` file:

```
global
default transparent

host rfsdemo.sixnine
exclude 0
map all
```

Essentially, `uid.rules` contains two 'blocks' of rules: the `global` block, which defines the permissions that will apply to the users on all machines for which there is no specific mapping; and one or more `host` blocks, one for each remote machine you want to map specifically. Both blocks are optional.

Within a `global` block, the `default` line can be either omitted, in which case the default 60001 is assumed, or `transparent`, which means that each user will have the permissions of the user with the same *uid* on your machine (most useful when the `/etc/passwd` files are identical on all machines) or you can use `default` *local*, where *local* is any local *uid* or name, meaning that any users who are not specifically mapped will have the permissions of the particular *local* user on your machine.

If you want to exclude certain users from having the permissions defined in the `default` line, you can add `exclude` lines. For example, if you use `default transparent`, you may want to `exclude 0` to make sure that remote `root` users don't have permission to modify files owned by the local `root` on your resources. You can either `exclude` *remote-id* or a range of remote-ids, as in `exclude 0` or `exclude 0-99`. In either case, the excluded remote user would then only have the permissions of the guest id (60001).

You can also add `map` lines to map specific remote *uids* to local *uids* or names. You can either `map` *remote-id:local-id_or_name* or simply `map` *remote-id*. For example, if you use the second form, `map 0` would give a remote `root` the same permissions as the local `root`.

The format of `host` blocks is `host` *RFS_domain.nodename* as in:

```
host rfsdemo.sixnine
```

`host` blocks can also include `default`, `exclude` and `map` lines. In a `host` block, `map` can be followed by the additional keyword `all`, meaning that all remote user names should be mapped to the permissions of those users with the same names on your machine.

The `gid.rules` file has the same general format as the `uid.rules` file, except that now you are mapping groups rather than users.

If, when you created the `uid.rules` and `gid.rules` files, you referenced any remote users or groups by name, you will need copies of the remote `/etc/passwd` and `/etc/group` files to put in `/usr/nserve/auth.info/`*domain/nodename* directories on your machine (note that `map all` maps by name). You'll need to obtain copies of these files by any suitable file transfer method (such as `uucp`), create directories as required and install them on your machine.

You are now ready to run `idload` with the `-n` option. This will print a listing of the mapping rules without creating the translation tables:

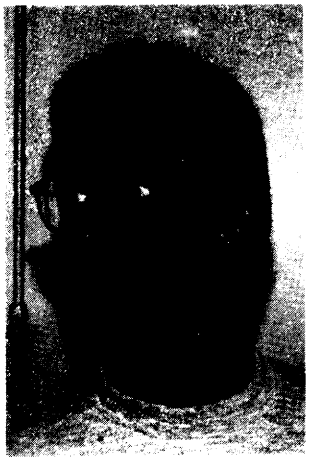
```
#
# idload -n
TYPE  MACHINE          REM_ID      REM_NAME       LOC_ID          LOC_NAME

USR   GLOBAL           DEFAULT     n/a            transparent     n/a
USR   rfsdemo.sixnine  DEFAULT     n/a            60001           guest_id
USR   rfsdemo.sixnine  0           n/a            60001           guest_id
USR   rfsdemo.sixnine  1           daemon         1               daemon
USR   rfsdemo.sixnine  2           bin            2               bin
USR   rfsdemo.sixnine  3           sys            3               sys
USR   rfsdemo.sixnine  4           adm            4               adm
USR   rfsdemo.sixnine  5           uucp           5               uucp
USR   rfsdemo.sixnine  10          nuucp          10              nuucp
USR   rfsdemo.sixnine  37          listen         37              listen
USR   rfsdemo.sixnine  70          trouble        70              trouble
USR   rfsdemo.sixnine  71          lp             71              lp
USR   rfsdemo.sixnine  124         colston        294             colston
USR   rfsdemo.sixnine  525         demo           693             demo

GRP   GLOBAL           DEFAULT     n/a            transparent     n/a
GRP   rfsdemo.sixnine  DEFAULT     n/a            60001           guest_id
GRP   rfsdemo.sixnine  0           n/a            60001           guest_id
GRP   rfsdemo.sixnine  1           other          1               other
GRP   rfsdemo.sixnine  2           bin            2               bin
GRP   rfsdemo.sixnine  3           sys            3               sys
GRP   rfsdemo.sixnine  4           adm            4               adm
GRP   rfsdemo.sixnine  6           mail           6               mail
GRP   rfsdemo.sixnine  12          daemon         12              daemon
GRP   rfsdemo.sixnine  100         staff          200             staff
GRP   rfsdemo.sixnine  300         visitor        400             visitor
GRP   rfsdemo.sixnine  500         demo           600             demo
```

If these mapping rules are acceptable, you can run `idload` without any options. This will create the translation tables. Finally, run `idload -k` to print the mapping rules that are now in effect.

In the next issue

In the next issue, maybe an article on YP.[1]

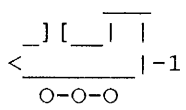
1. Yellow Pages is a registered trademark of British Telecom in the UK.



EUUG Software Distribution

Frank Kuiper
euug-tapes@EU.net

Centre for Mathematics and Computer Science
Amsterdam



By the time you read this, the Munich conference will have been over, and those who visited will be able to tell you all about the German beers.

For those who have missed all that, here is some news.

We have two new distributions to report. One is the Munich conference tape, containing a lot of material about graphics: conversion programs, display tools, toolkits, and of course lots of images to play around with. This tape is already very popular, as about 120 people ordered the tape via their conference booking form! Never has an EUUG Software Distribution been so popular.

Also noteworthy about this distribution, is the fact that over two-thirds of the people who pre-ordered this tape, requested to receive a cartridge. Goodbye to the old, familiar ½", 9-track, reel tape, that most UNIX users have grown up with. Oh well, I guess the cartridge will soon be replaced by something like the 8mm tapes, with their Gigabyte storage capability.

Another new tape is one I received from our French group, the AFUU. They have compiled a benchmark tape. And so as not to frighten those who fear to have anything to do with the French language, our AFUU friends have made an English version as well. Including English documentation.

As this benchmark tape is much better than the now existing EUUGD5 tape, I've decided to stop distributing the EUUGD5, starting May 1st. The software on that tape dates from PDP/11 days ...

Other News

I haven't received any replies to my request in the last EUUGN, about the need to put all the EUUG distributions on one 8mm Gigabyte tape (some 500 Megabyte). Not even one reaction of interest or disinterest! Is it the price! Is it inconvenient? Or do people want more on that tape? The public domain available sources from mcsun.eu.net maybe? Just tell me, and I'll see what I can arrange.

I'm still planning to create a so called "Starter Kit" tape, with all the necessary mail and news software on it, but so far haven't found the time to just do that. Neither did I have time to "update" some existing tapes, like the EUUGD16 "GNU" tape. I hope to be able to do all this in the weeks after the conference. I'll tell you all about it in the next EUUGN.

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 in the public domain, and you might even become famous!

This is a list of all the current (April 1990) 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. I am working on a method so you can, by e-mail, easily find out which program is on which distribution. For the moment you will have to e-mail, call, or write me to find out.

Prices of the tapes are in Dutch guilders (DFl), and do not include VAT-taxes. Prices do include postage cost for surface mail within Europe. Any

special shipment costs, like with DHL, will be billed through.

The first price listed with each distribution, is for 1/2", 9-track, reel tapes in tar 1600 bpi format, the second one is for distributions on 1/4" cartridge tapes in (Sun) 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 130.-/190.-

EUUGD2: Early Pascal compiler of the Free University of Amsterdam. V7 source licence minimum.
Price: DFl 130.-/190.-

EUUGD3 R3: Currently not available. We're working an a new tape, dubbed "Starter Kit" containing public domain news and mail programs.

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 160,-/190,-

EUUGD5: Currently not available. See tape EUUGD20 for new benchmark software.

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 250,-/310,-

EUUGD7: UNIX|STAT Version 5.2. A collection of about 25 data manipulation and analysis programs written in C by Gery Perlman.
Price: DFl 70,-/190,-

EUUGD8: A collection of useful software, based on the so called Copenhagen tape (EUUG UNIX conference Autumn 1985).
Price: DFl 130.-/190.-

EUUGD9: A collection of useful software, based on the so called Florence tape (EUUG UNIX conference Spring 1986).
Price: DFl 160,-/190,-

EUUGD10: MMDFIIb. Multichannel 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, 2.9 BSD, System III/V on a variety of different hardware. You should first obtain a licence agreement by sending a message to euug-tapes@EU.net. Return the signed licence with your order.
Price: DFl 100,-/190,-

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 130.-/190.-

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 130.-/190.-

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 130.-/190.-

EUUGD14: → NOW A NEW VERSION ←
This is version 6.0 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. The EUUG will send you a tape only.
Price: DFl 130,-/190,- 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 complete X11 Windowing system, as distributed by MIT, release 4: X11R4. Do to the vast growth in user contributed software, this distributions now totals 60 Mb in compressed form. This results in two 1/2", 9-track tapes, and one 600 ft, Qic-24, 1/4" cartridge. This includes the core system, as well as much, very much user contributed software.
Price : DFl 260.-/200.-

EUUGD16: This is the Brussels EUUG 1989 spring conference tape, and consist entirely of software from the GNU project from the Free Software Foundation (not to be confused with 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 130.-/190.-

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 130.-/190.-

EUUGD18: This is the "Vienna EUUG 1989 autumn conference tape", and consists entirely of games! There is a SUN specific set, a set for the X Windowing System environment, and a general useable set. All the games supplied are working, and have been tested at CWI by our "Games Keeper <play@cwi.nl>". For many games he added additional features, not found in the originals.
Some of the games included are: for SUN: Asteroids, Mahjongg, Othello, Qix, Sdi, Tetris. For the X environment: Xtrek, Xgo, Xwanderer, Xrobots. General games: Nethack, Adventure, Atc, Empire, Reversi, Yahtzee, Trek73, Backgammon, Corewars, MazewarsV, Vtrek, and lots, lots more.
If this doesn't bring some fun back into using computers, I don't know what else can :-)
Price : DFl 130.-/190.-

EUUGD19: This is the "Munich EUUG 1990 spring conference tape", and consist entirely of graphics material. Conversion programs, display tools, toolkits to build you own display program, and off course images, lots of pictures to play around with.
Price: DFl 130.-/190.-

EUUGD20: This tape contains benchmarking software and is named "AFUU/SSBA 1.2, benchmarks". The French group have done a good job creating a tape with all the necessary tools, so you can finally bring your machine down to it's knees, and see what it is really worth.
Price: DFl 70.-/190.-

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)
Fax: +31 20 5924199
Telex: 12571 mactr nl
Internet: euug-tapes@EU.net

Please note that for distributions D1, D2 and D4 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 DFl 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 1/2", 9-track, 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:

.....

.....

.....

Copy of 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: .....

AT&T Column

Gill Mogg
gill@uel.uucp

Unix Europe Limited (UEL)
International House
Ealing Broadway
London W5 5DB

Gill Mogg is in Market Communications at Unix Europe Limited.

The guest writer this issue is:

Vijayakumar Vijayaratnam Senior Consultant – AT&T UNIX Software Operation, Europe

Mr Vijayaratnam has been involved with the Information Technology industry for the past 10 years. He has developed and provided consultancy in the area of application/system software, on hardware ranging from PCs to mainframes, running a variety of operating systems. He is currently working with Databases and Transaction Processing systems in a UNIX environment.

Transaction Processing – into the Open Systems Environment
by Vijayakumar Vijayaratnam, AT&T UNIX Software Operation, Europe

Introduction

Mainframe environments have always been considered the appropriate medium for the processing of high volume transactions. Open Systems, specifically the UNIX operating system, have achieved limited penetration in this particular field.

Changes in the status quo are, however, under way. Increasingly users have recognised that the characteristics of the UNIX System – freedom of choice in hardware, freedom of choice of database software, compliance with industry networking standards – are equally essential and beneficial in building a transaction processing system.

The wider use of the UNIX operating system, coupled with the technological advancements of UNIX-based data management applications, means that it is becoming common for institutions to look for UNIX based TP systems to address the needs of their data management environments, with special emphasis on systems that can provide such functionalities as concurrency controls, resource management, scheduling and the prioritisation of tasks, normally found on large proprietary mainframe systems.

What is Transaction Processing?

Transaction Processing (TP) involves computer applications which affect us directly in our daily lives. The classic TP example is a hotel or airline reservation system, in which a person at a terminal talks directly to a computer database about the actual, up-to-the-minute room or seat availability position while you, the customer, wait to see if the reservation (ie transaction) is confirmed. Other applications are in the financial and manufacturing areas.

In computer terms, TP systems are designed to provide the highest throughput in the shortest possible time to a large user base. The basic characteristic of the TP environment is that users

are often performing similar or identical tasks. For example, in a transaction system, many users may be completing the same order entry screen prior to a customer order being entered in the system. In this instance, the different characteristics of the traditional UNIX environment are immediately obvious. Under UNIX, users are performing very different kinds of functions – one may be performing a compile while another is editing a document etc.

A second major characteristic of the TP environment is the predictable nature of the input. A TP system is built on a limited number of input types – add, update, query, delete etc. All such interaction with the system is performed using electronic forms or screens. In a typical environment there may be between one and a hundred such forms. The duration of interaction between the form and the transaction system is very short, often involving a short program in which the input is verified and a response relayed to the user.

TP systems rely to a large degree on a mechanism which prioritises the running of the tasks. One example of this is a customer service application, in which the transaction dealing with retrieving the customer details must have precedence over, say, a task which is performing a management report.

The components of TP system include a transaction manager, a database management system and the business application itself. The transaction manager provides communications and co-ordination in a TP system, the application provides the forms processing and business logic, and the database management system manages the storage and retrieval of data.

Today, there is a tendency towards distributed TP environments, in which users access a number of databases scattered over a wide geographical area. In an environment of this type, there is a need for a system capable of managing tasks in a timely and efficient manner, as well as providing the basic functionalities such as robustness and concurrency controls. The system which handles this function, the TP MONITOR, is thus an integral part of the daily activities of all types of organisations concerned with providing access to a large user base reliant on instantaneous access to stored information.

What is a Transaction?

A transaction is a set of operations (a unit of work) that results in the transformation of the database from one consistent state to another. This, however, is not how the end user sees it. In his terms, the transaction begins with the entry of data on a screen or a form, continues with the scheduling of the transaction type through a TP MONITOR which provides the services to the request, and concludes with a response to the user, often in the form of a report. In a distributed environment, the term transaction describes a unit of work that may be composed of information gathered from a number of physical locations, but represented to the user as a logical unit.

Taking TP into the Open Systems Arena

Scepticism about the capabilities of Open Systems for TP remains strong. Some organisations are vehement in their claims that such processing can be expedited successfully only on proprietary systems with proven track records. On the other hand, moves towards a genuine open systems based TP platform are already well established. Meeting such a challenge depends on two operations which are key to open systems in general – the definition of standards, and the development of products which conform to them.

Standards

In the database realm there is an existing standard – SQL – which defines the interface to the database and allows multiple applications to work on a single database.

TP has been the subject of standards activity for some time. X/Open's first group on the matter was formed as long ago as 1987, and produced a White Paper that Summer. The XTP Group, its successor, has continued with the work since March 1988, with the intention of defining a standard for On-Line Transaction Processing (OLTP). A second X/Open working group, the Data Management Working Group (DMWG), concentrates on the specification of standards for database environments. The goal of the two groups is to define a TP model and a common set of interfaces that will enable providers of TP and DB systems to achieve the objectives of open systems, by providing applications that conform to these interface standards.

Three axioms represent the basis of the TP standards work undertaken by the X/Open committees: interoperability, portability and interchangeability. Interoperability is the capacity to write transaction programs that draw on the resources of several different Resource Manager (RMS), perhaps at different sites, and perhaps produced by different vendors. Customers will be able to perform multi-site update to heterogeneous RMS. The portability of applications is designed to ensure that customers can move their X/Open compliant code to different systems without changes. Interchangeability is the facility to exchange RMS without having to rewrite transaction programs, to support standards that X/Open has previously endorsed (such as SQL and Indexed Sequential Access Method, ISAM), and to permit a compliant system to operate in the framework of other standards, such as the ISO/TP protocols. As a result, the current work undertaken by the committees will preserve, as far as possible, existing RM interfaces.

The work of the XTP committee has so far yielded a model for distributed transaction processing (DTP), which will work well even in a non-distributed environment, and a set of routines, collectively known as the XA interfaces, that will enable RMS to communicate with TMS effectively in a heterogeneous environment.

The DTP model has three functional components:

The Application Program (AP), defines transactions and supervises the actions that constitute a transaction

The Transaction Manager (TM) assigns a global transaction identifier to transactions, monitors the progress of transactions, decides whether a transaction can be committed, and performs failure recovery.

The Resource Manager (RM), such as databases or file systems, uses shared resources as directed by the AP. This service interface may be SQL or ISAM. The TM also calls the RM to declare start, end and disposition of transactions.

For an Open System policy to operate successfully, all the above components must be able to communicate with one other. The application to RM interface is provided by standard SQL, while a vital element of the standard model is the XA Interface, responsible for the TM to RM interface. This incorporates the technically important *two phased commit* protocol while retaining the SQL interface to the underlying databases. Two phased commit is the key protocol to allow distributed access to a database to make changes (for example a new flight reservation) while guaranteeing data integrity in case something goes wrong in the middle (for example, a tunnel project cuts the phone line). The XA Interfaces have been adopted as the standard for AP to RM interfaces, and are to be published in the X/Open Portability Guide.

AT&T has proposed an extension to the standard model called the Application Transaction Management Interface (ATMI), which gives the programmer transparent access to network communications primitives, automatic data conversion and transaction control operations. This covers the interface between the AP and TM.

All of this activity demonstrates that the move towards an Open Systems TP standard is by no means a recent undertaking. Instead, as a result of the work of X/Open, a superstructure is in place to which products under development at the present time can meaningfully conform.

Products

As we saw, the successful implementation of an open OLTP system depends on the availability of compatible products in three areas: the database, the application and the transaction manager. With the expansion of the UNIX system as a viable operating system for database and business technology applications, state of the art products are appearing, all of which conform to recognised standards. One example of this is the large number of database products from the major independent software vendors, such as ORACLE, INFORMIX and EMPRESS, which already incorporate the SQL standard.

Unlike SQL, an OLTP standard is a new phenomenon, and products are just starting to be announced in the marketplace. There is every reason for confidence that as these products make their impact on the market, the long standing myth of UNIX's weakness as a TP environment will vanish from memory!

TUXEDO – The Transaction Processing Manager for UNIX System V

The TUXEDO (TM) system recently announced by AT&T's UNIX Software Operation meets the X/Open standard and provides an open, distributed TP monitor available to computer

manufacturers and applications vendors. TUXEDO has been designed to exploit the strengths of UNIX System V in networking to allow the distribution of OLTP applications across networks and across multiple servers in multiprocessor systems. These multiprocessors, exploiting RISC chip technology, will provide the high capacity databases serving over a thousand simultaneous users which have up to now required the expensive mainframes for their solutions.

TUXEDO System V Release 4.0 incorporates two components that can be licensed and deployed separately: the System/T Transaction Manager and the System/D DBMS. Both components incorporate the XTP transaction model, including the XA interface which allows TUXEDO System/T to control transactions for compliant vendor databases while retaining their native SQL interface. It also incorporates the ATMI interface, which AT&T has proposed as a standard application interface for transaction processing.

Article republished courtesy of Systems International magazine.

****

!%@:: A Directory to Electronic Mail Addressing and Networks Second Edition, 1990

The new 1990 edition of !%A:: A Directory of Electronic Mail Addressing and Networks, by Donnalyn Frey and Rick Adams will be available in June, 1990. This new edition provides readers with a directory and usage guide to over 130 of the world's research and educational networks, as well as commercial networks. The network information has been updated for 1990, with many new networks added. The directory makes it easy for readers to find networks they can use to reach other people around the world and guides readers in how to use them. It also assists readers in finding someone's email address and sending mail. The book is in an easy-to-use short reference format.

The directory is of use to system administrators who field electronic mail questions, network administrators who work with networks in other countries, researchers who want to get in touch with other researchers, conference attendees with many contacts, and others who routinely send email. Each network section contains general information about the network, as well as address structure and format, connections to other sites or networks, facilities available to users, contact name and address, cross references to other networks, network architecture, future plans, date of the last update, and a map showing the network location. Also included is a three-way index to network name, network type, and country, as well as a list of many of the world's second and third level domains.

This new edition contains:

- information on new networks such as AlterNet, CANET, CA*net, EASInet, InterEUnet, IXI, MFENET-II, TUVAKA, XLINK, and YNET
- updated information on networks that are reorganizing or have reorganized, such as BIONET, ESNET, MFENET, NYSERnet, and OnTyme
- information on networks in the Soviet Union, Eastern European countries, and the People's Republic of China
- networks not in the first edition, such as ATT Mail, KREOnet, and SCIENCEnet
- updates of most of the existing networks described in the first edition which was published in 1989.

This new edition is the most up-to-date guide for directing your electronic mail; it is a real time saver. The book will continue to be updated every ten to twelve months. Readers who fill out the response card in the book have the option of either receiving notification of updates or receiving the updated edition automatically at a 25% discount.

Report on ISO/IEEE JTC1/SC22/WG15

"Dominic Dunlop
domo@tsa.co.uk"

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 the odd standard, and starting the odd company. He became an independent consultant in January 1989, and his latest company, The Standard Answer Ltd, has just bought an Apple portable as the Unix machine is too heavy to carry around.

Report on ISO/IEEE JTC1/SC22/WG15 Rapporteur Group on Internationalisation Meeting of 5th – 7th March, 1990, Copenhagen, Denmark

Denmark. A small country which has tax rates so high that its five million inhabitants complain that, when they buy themselves a car, they have to buy one and a half cars for the government. Some part of that tax goes to fund Dansk Standardiseringråd (DS), the national standards body, which works hard to ensure that the needs of Danes are not overlooked when larger nations get together to write standards. DS has got its teeth into international standards for computers, and with good reason: we've been doing things wrong all along. We'll have to mend our ways if we are to produce standards which really fill international needs, even if we don't go as far as building in a framework which can easily accommodate Danish taxation.

Metropolitan Chicago today has a population larger than that of Denmark. Imagine that you've just rebuilt the downtown area after the fire of 1871, only to have Alexander Graham Bell come along with the telephone, Edison deciding to generate electricity, and railroad companies starting to promote inter-urban lines. Your reaction might well be "Oh, sh*t!" All these innovations need new infrastructure — cables and conduits and tunnels which you just hadn't known you'd need when you laid the roads, put up the buildings, and connected them to gas, water and drainage. As a result, competing telephone and electric companies string a tangle of wires from poles with little regard to safety and no regard for aesthetics or standardisation, while elevated railways appear above existing roads, cutting off light at street level and filling upper floor rooms with smoke[1]. Only after many years of disruption, digging up streets and making holes in the walls of existing buildings would telephones, electricity and public transportation be safely hidden beneath the ground[2], unseen, but playing an essential part in supporting the life of the city.

A descendant of Alexander Graham Bell's telephone company now supports the UNIX operating system out of Chicago. UNIX is a lot like the Chicago of the last century. We've got to the stage of unifying the major variants in the POSIX standards and the commercial System V, release 4, only to find that there is an increasing

1. In 1887, the West Chicago Protective League complained "... the proposed elevated road would materially and irreparably depreciate the value of real estate upon said streets... and render the dwelling houses thereon unfit for private residences..."[0], but amid the kind of political maneuverings for which the city is justly famous, the "L" got built anyway.
2. Well, in the case of Chicago, some of the public transportation. You can still ride the L.

clamour for whole new infrastructures to support international needs, to improve security, and to show that the system is performing as billed. Suddenly, we've got to add features to handle these requirements, and we've got to try to do it while observing the three conflicting maxims of standardisation: do it once, do it right, and do it now. What's more, we have to try to do it in a way which remains hidden: existing programs should not break, nor should they get noticeably bigger or slower.

POSIX is not alone: those responsible for computer language standards face the same problems, and have also been the subject of constructive Danish criticism[2][3]. The Danes' long-standing interest makes it particularly appropriate that the first meeting of the ISO POSIX working group's special interest group on internationalisation should be hosted by DS in Copenhagen. Internationalisation is the process of removing cultural bias from a system, and then providing tools to allow system administrators to *localise* the system by adding a cultural bias of their own choosing. No wonder Dansk Standardiseringr}d — sorry, Dansk Standardiseringråd — is interested in this technology: its employees court a syntax error every time they type its name at the UNIX shell[3]. Internationalisation will allow Danes to mold systems to their requirements, rather than having to rub along with implementation assumptions based on American practice.

The Japanese are interested too: their cultural differences make Denmark look close enough to the U.S.A. to be a fifty-first state! And the U.S.A. is interested because it has been charged by ISO with the production of ANSI standards *base documents* for the international POSIX standards, and wants them to reflect international needs. Denmark, Japan and the U.S.A. sent representatives to the internationalisation meeting. There were also observers from EUUG/USENIX (myself), the IEEE's 1003.0 working group, and from an ISO study group which is grappling with the issues of character set use in computer languages.

The official title of the POSIX internationalisation group is the *ISO/IEEE JTC1/SC22/WG15 Rapporteur Group on Internationalisation*. (Few things in ISO's world have short names.) Just to explore some more of the jargon, a *rapporteur* is a *technical expert* nominated by a *member body* — a national standards organisation such as ANSI or DS — to take an interest in a specialised aspect of a particular standards effort. WG15, the ISO POSIX working group, has rapporteur groups on security, conformance testing and internationalisation. The security group met in January, in conjunction with the New Orleans meeting of the IEEE 1003.4 working group; the conformance test group, which corresponds to the IEEE 1003.3 effort, met in Copenhagen along with the internationalisation group (although this report does not cover its meeting).

Internationalisation is peculiar in that, although the IEEE's POSIX standards are drafted with international needs in mind, there is no internationalisation working group within the POSIX project. There *is* a study group which, as part of the 1003.0 "POSIX Guide" work, is trying to decide how to bring internationalisation into the official structure, so that it can be given officers, schedules, terms of reference, and all those other good things which make us standards people feel safer. It's a big problem, because the issue really affects every aspect of POSIX — it just took a while to realise that it was an issue at all. Unlike — say — realtime extensions, security extensions, or transparent remote file access for POSIX, internationalisation doesn't really make sense as an add-on to a basic operating system interface standard. Rather, the operating system *and* all its extensions need to be internationalised as a matter of course. Every other working group in the IEEE POSIX is charged with producing a distinct standard, but it is difficult to see how a new group dealing with internationalisation group could be given such a goal.

ISO has a similar problem, but it's worse because the organisation has so many balls to keep in the air. If it is to apply the "do it once" and "do it right" maxims to internationalisation, it seems clear that the issue must be handled near the top of Joint Technical Committee 1, the information technology standards group. After all, as well as

3. ISO 646[4], the earliest ISO standard for information technology, is the international derivative of ASCII. Its Danish variant replaces ASCII's } with å. Around the world, #$@[\]^`{|}~, all of which have a special meaning to the shell, are replaced by other characters in standards derived from ISO 646. See [5] for much more information.

computer languages and operating systems, internationalisation affects communications, document standards, database and much more. ISO recently bit a similar bullet, establishing a new subcommittee (SC27) immediately below JTC1 to handle the security issues which are beginning to affect so much of its work. It may yet do the same with internationalisation.

The "do it now" criterion, on the other hand, argues in favour of addressing internationalisation at a lower level — doing the work in a new department, rather than going to the trouble of establishing a whole new division. SC22, which is responsible for language and operating system standards, is currently considering the setting up of a new working group at the same level as WG14 (C language), WG15 (POSIX) and the rest. This proposal has run into opposition, both from those who say that the issue should be handled at a higher level, and from those who feel that there isn't an issue: after all, aren't ISO's standards supposed to be international anyway?

Meanwhile, WG15 has established a subordinate group to handle internationalisation at the lowest level possible. As somebody said at the meeting, "You can't get much lower than us." We spent our time discussing what we were supposed to be doing — and, equally important, what we could leave to others. In the end we came up with a little list:

Terms of Reference

> The rapporteur group on internationalisation (RIN) will study the aspects of internationalisation related to POSIX and report its findings to SC22/WG15.
>
> *(Bland, imposing no needless restrictions on what we can do.)*

Program of Work

1. Carry out survey to capture most of the requirements relevant to internationalisation.

   (A job and a half. We have to search out users around the world, and persuade them to tell us what features they really want, rather than what they can put up with, or program their way around[4].)

2. Identify and forward requirements with recommendations to WG15.

   (So WG15 gets to carry the can for us...)

3. Capture and collect national body profiles for reference.

   (Denmark and Japan have already done some work on "profiles" that customise POSIX to suit local needs. Their work suggests that current internationalisation features are inadequate.)

4. Perform investigations as needed to advance the internationalisation work of WG15.

   (We can poke our noses into anything that takes our fancy...)

5. Review, from an internationalisation perspective, documents submitted to WG15 for review and comment from an internationalisation perspective.

   (We definitely get to poke our noses into anything that comes past WG15...)

6. Review, and evaluate impact on work of WG15 of, other documents relevant to internationalisation circulated in JTC1 or its subcommittees.

   (And we'll try to get our hands on information from further afield.)

That's a lot of work. It defines the function of our particular mill, but that mill still needs grist. That feedstock has to come from outside our group, and, because of our lowly position, we have to ask WG15 ("daddy") to ask others to supply it. WG15, in turn, may have to refer some requests to higher authority: we want to be aware of anything which happens in SC22 which is relevant to POSIX internationalisation — for example, what the C language people in WG14 are up to. That involves going up another level in JTC1's hierarchy. Getting in touch with other subcommittees, such as SC2, which looks after character sets, potentially involves going right to

4. But we need to be a lot more diplomatic than asking "What ticks you off most about these dumb American machines?" — although appeals to chauvinism have been known to achieve results...

the top of the bureaucracy. (Luckily, in this particular case, SC22's study group on character sets can stand in for SC2[5].) Consequently, when WG15 next meets in Paris in June, it will have to deal with several resolutions concerned with turning on the taps and starting the information flow to the rapporteur group.

One of these taps is a little sticky: WG15 doesn't officially have a relationship with the IEEE's 1003.0 group, although it can, via ANSI, talk to 1003.1, 1003.2 and 1003.4 through 1003.9. The problem is that 1003.0 deals with *profiles*, baskets of standards which, when brought together, solve particular classes of problem — for example, those of transaction processing, realtime or batch-oriented systems. Profiles are outside the scope of the ISO POSIX effort, so we can't officially talk to 1003.0, even though its study group is currently holding the baton on internationalisation. Never mind. We'll do things unofficially until some official pathway is sorted out.

Apart from all this organisational stuff, we did review some existing documents. For example, DTR (draft technical report) 10176, a product of SC14, discusses the treatment of characters appearing in language constructs, variable names, literals and comments, and turns out to have implications for *sh*, *awk*, *yacc* and the other "little languages" defined in DP 9945-2, the forthcoming international standard for the shell and tools. And a document from SC22's study group on character sets suggests that source files should have some means of announcing the character set that they're using. Could this mean typed files or resource forks for POSIX[6]? Gee. How would we hide that?

The group next meets in Paris on June 11th and 12th, just before the WG15 meeting. If you want to come along, you have to persuade your national standards body firstly that you're a technical expert on POSIX, and then that they should appoint you as internationalisation rapporteur. This may be surprisingly easy — considerably simpler, for example, than getting somebody to fund your trip. To quote from [8], "...standards committees would be hard-pressed to find people who participate on their voluntary committees with purely rational-economic expectations. Standards committees seem bent on justifying their existences by using hard data to prove that standards are good, yet they persist in using altruistic appeals to attract committee members." If you feel like responding to the altruistic appeal of this article, contact me by electronic mail.

Alternatively, if you're a European, you can remain seated in front of your terminal and participate in a news forum on ISO 646 and all that: Keld Simonsen of the Danish UNIX Users' Group has volunteered to initiate a discussion of the European perspective on character sets for POSIX. Denmark may be small, but it's certainly making its voice heard on this issue!

5. SC2's answer to life, the universe and everything is DP (draft proposal) 10646, which defines a 32-bit wide character set with 8- and 16-bit wide canonical versions for storage and transmission, and a 24-bit wide processing version for those who can get by with only eight million characters or so. As it's still at the DP level, it'll be a long time before it hits the streets, and, even when it does, there's the little matter of getting people to use it...

6. UNIX' elegant and flavourless files have already taken a beating from X3.159, the ANSI C standard[6], since other operating systems tend to support filing schemes which are merely tasteless[7].

References

1. Brian J. Cudhay, **Destination Loop**, *Stephen Green Press/Viking Penguin* (1982)

2. P. J. Plauger, **Quiet Changes, Part I**, *The C Users Journal, vol. 8, no. 2 (February, 1990)*, pp 9-16.

3. Keld Simonsen, **A European Representation for ISO C**, *European UNIX systems User Group Newsletter, vol. 9, no. 2 (Summer 1989)*, pp 15-18

4. ISO 646:1983, **Information processing — ISO 7-bit code character set for information interchange**

5. Keld Simonsen, **An extension to the troff character set for Europe**, *European UNIX systems User Group Newsletter, vol. 9, no. 2 (Summer 1989)*, pp 2-14

6. ANSI X3.159, 1989, **Programming Language C**

7. P. J. Plauger, **Evolution of the C I/O Model**, *The C Users Journal, vol. 7, no. 6 (August, 1989)*, pp 17-25.

8. Carl F. Cargill, **Information Technology Standardization: Theory, Process and Organisations**, *Digital Press* (1989)

Puzzle Corner

Mick Farmer
nick@cs.bbk.ac.uk

Birkbeck College
Malet St
London WC1
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.

Hello peeps,

Solution to Puzzle Number 10

If two thirds (40/60) failed on Compilers and three quarters (45/60) failed on Graphics then the *minimum* number failing both is 25/60 of the class (the maximum number may be much higher). In addition, if four fifths (48/60) failed on Networks then the smallest number now failing is 13/60 of the class. This fraction equals 26 students, which means 120 students failed.

Solution to Puzzle Number 11

This is another simple problem solvable on paper, or using something like Prolog. There are three possibilities given the basic facts. The unique solution gives Ms Portuguese offering French and Hungarian.

A complete solution is available to anyone interested.

Puzzle Number 12

A flat roof tile 10" × 4" × 3/16" weighing two lbs. rests, with its long dimension along along the slope, on a smooth wooden roof having an angle of 20 degrees to the horizontal as illustrated in Figure 1.

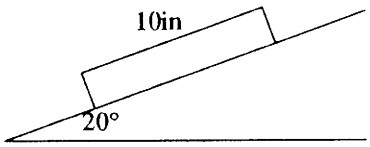


Figure 1 The Creeping Roof Tile

The tile is not attached to the roof, but is kept from sliding down by its friction, the coefficient being 0.5. In the morning of a winter day the tile is at a temperature of 0°F. During the day it is warmed by the sun to 50°F, and at nightfall it is again chilled to 0°F. After such a cycle of heating and cooling, will the tile have moved from its morning position by the end of the day, and if so, how much and in what direction? Assume the tile has a thermal coefficient of expansion of 6×10^{-6} inches per inch per degree and no expansion of the roof.

Puzzle Number 13

I recently came across an old-fashioned toaster that had two heating elements, one on each side, with a door on each side to hold the toast. Thus only one side of the bread could be toasted at a time, but two pieces could be toasted simultaneously. It takes two hands to insert or remove each slice. To turn the slice over it is merely necessary to push the toaster door all the way down, and allow the spring to bring it back. Thus two slices can be turned at the same time, but only one can be inserted or removed. The time to toast a side is exactly 0.50 minutes. Time to turn over is 0.02 minutes. Time to remove toasted slice and place on plate is 0.05 minutes, and the time to take a slice of bread from the plate and put it in the toaster is 0.05 minutes. The problem is to find the shortest possible time required to toast three slices of bread on both sides, starting with bread on plate, and returning toast to plate. Assume the toaster is warmed and ready to go.

Loads-a-puzzles,

Mick

A New Data Encoding Scheme

Andrew B Cheese
abc@cs.nott.ac.uk
Julian P Onions
jpo@cs.nott.ac.uk

Computer Science Department
Nottingham University
Nottingham.

Introduction

The computer industry from its very inception has used the binary system to represent all types of information. This system has much to recommend it's use. It is simple to construct hardware based upon this system and all the normal arithmetic and logical operations can be performed upon it.

However, it is the authors opinions that this system is not as optimal as it could be and that some rather simple changes to the method of encoding data can bring about large increases in storage, communications and reliability.

The Idea

The basic ideas stem from the seemingly simple idea of replacing the binary method of encoding by a different scheme. In essence, all that is required is to take the value normally represented by a 1 or true state, and replace this with two 0's or false states. e.g.

decimal	binary	new scheme
9	1 0 0 1	00 0 0 00
13	1 1 0 1	00 00 0 00

At first sight there doesn't seem to be much of an advantage in this scheme of encoding but as the rest of this paper will attempt to prove, the benefits are enormous when applied in the proper way.

This method, whilst not binary is also not strictly unary. It has therefore been christened sesquinary (from sesqui – one and a half).

Applications

File Storage

An intelligent operating system can make great use of the encoding. As an example, a file need not be stored as the complete set of bits. All that is required is for the operating system to keep count of the "number" of zero's in the file. In the case of the UNIX System this would mean that the entire disc would consist of inodes. Each inode, instead of referencing blocks would keep a count of the number of zeros. For large files, double and triple indirection could be applied – see the section below on compression. Obviously, for small files, the single indirection is more cost-effective but with larger files it would pay to move towards more indirection as a saving of space. A flag in the inode could keep count of the number of indirections currently performed.

This scheme does have some overhead in the updating of random access files, in that the operating system must first "unpack" the file, perform the update, and then repack the file. This could probably be done in virtual memory for most operations though.

Networking

In networking, this method really comes into it's own. To begin with, there are practically no bandwidth limitations. The problems inherent in normal communication over serial and phone lines stems from the ability to detect the transitions between two states. Once this transition is removed, and the data is in effect transitionless, the bandwidth of the circuit is only reliant on the speed with which zeros can be pumped down the

line by the hardware (and the rate at which they can be received of course).

Another advantage comes in the standard ethernet environment. Normally an ethernet transceiver must wait for a clear slot to arrive, transmit the packet and detect if a collision occurred, if so it must retry. With the all zero encoding method transmission can take place at any point, there is in effect nothing on the ethernet that can scramble the signal as all hosts are transmitting zeros.

Compression

As hinted at above the possibilities for compression are fantastic. You can forget Huffman encoding and Lempel-Ziv can take a walk! The compression techniques can reduce any amount of data to 1 number, although that number may be larger than the convenient word size of a given architecture. The basic algorithm is outlined below.

```
while (length(data) > 1) {
    data = count_zeros(data);
    iteration ++;
}
return iteration;
```

This can be also be changed to do essentially the above but in N steps for large files.

Hardware

It is expected that there may be some implementation problems associated with the hardware of this device. However, the benefits appear to outweigh the drawbacks in many ways. To begin with, the memory using this technique should be simple. There is no need to invert bits or to even sense the bits – they should all be zero anyway. Memory failure can be detected very easily, no need for complex CRC checks – any 1 bits are obviously due to failing memory.

Another advantage is that all memory is effectively permanent, as there is no state to be saved. This means computers built using this model should be unaffected by power-outs and be impervious to crashes.

Encryption

This scheme also seems to lend itself to data encryption. The details have not been fully worked out and may appear in a second paper once the decryption algorithms have been straightened out.

Parallelism and Data-flow

Again, this method has more advantages for parallel hardware. Shared memory is particularly easy to implement for the same reasons that the ethernet is easy - effectively there are no changes in memory state so collisions can't happen (unless defective memory is present).

Implementation

There have been some doubts raised about the hardware realisation of this technique, but in general this can probably be attributed either to the resistance to change generally found, or by manufacturers protecting their own interests. The vast benefits that this method seems to have though should mean that once it is taken up it will clean up in the computer industry.

****

Fiona Anne MkKie
was born 23:38 on 29th Dec 1989,
11 weeks early.

She weighed in at 2.15Kg,
a good size.

Gilly is fine too.

Glossary

There are approximately 5000 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.

abbreviations	Words that have been shortened
abstract	A summary of a piece of writing
accreditation	Give credit to
aesthetics	Regard for beauty
alternative	A choice between two things
arcane	Requiring secret knowledge to be understood
clamour	A loud noise - a public demand
convey	To communicate
daddy	Parent - Father
deemed	Judge, consider
deploy	Redistribute
dramatis personae	List of actors in a play
dub	To be given a name
endorse	Gives approval
evolves	Develops gradually
expound	Put forward a theory - explain
foiling	Attempt to defeat/counter
hop	Jumping on one leg - jumping from place to place
inception	The beginning
maundy	Thursday before Easter
notification	Inform
nudge	A gently poke or push
onion	Vegetable often eaten with cheese
overview	A generalisation of a subject
prior	Before, advance
prolific	Successful
recent	Not long ago
render	To cause to become
resides	Lives permanently in one place
retain	Keep
scheduled	Event that is planned to occure at a certain time
sidled	Move along sideways - creep in
yeoman	Keeper of the Tower of London - reliable and trustworthy

AUSTRIA - UUGA
Friedrich Kofler
Schottenring 33/Hof
A-1010 Wien
AUSTRIA
Tel: +43 222 34 61 84
uuga@tuvie.at

BELGIUM - BUUG
Marc Nyssen
Department of Medical Informatics
VUB, Laarbeeklaan 103
B-1090 Brussels
BELGIUM
Tel: +32 2 477 4111
Fax: +32 2 477 4000
buug@vub.uucp

DENMARK - DKUUG
Mogens Buhelt
Kabbelejevej 27B
DK-2700 Bronshoj
DENMARK
Tel: +45 31 60 65 80
mogens@dkuug.dk

FINLAND - FUUG
Anu Patrikka-Cantell
Finnish UNIX Users' Group
Arkadiankatu 14 B 45
00100 Helsinki
FINLAND
Tel: +358 0 494 371

FRANCE - AFUU
Miss Ann Garnery
AFUU
11 rue Carnot
94270 Le Kremlin Bicetre
Paris
FRANCE
Tel: +33 1 46 70 95 90
Fax: +33 1 46 58 94 20
anne@afuu.fr

GERMANY - GUUG
Dr Anton Gerold
GUUG-Vorstand
Elsenheimerstr 43
D-8000 MUNCHEN 21
WEST GERMANY
Tel: +49 89 570 7697
Fax: +49 89 570 7607
gerold@lan.informatik.tu-muenchem.dbp.de

HUNGARY - HUUG
Dr Elôd Knuth
Computer and Automation Institute
Hungarian Academy of Sciences
H-1502 Budapest 112, P.O. Box 63
HUNGARY
Tel: +361 1 665 435
Fax: +361 1 354 317

ICELAND - ICEUUG
Marius Olafsson
University Computer Center
Dunhaga 5
Reykjavik
ICELAND
Tel: +354 1 694747
marius@rhi.hi.is

IRELAND - IUUG
Norman Hull
Irish UNIX-systems User Group
Court Place
Carlow
IRELAND
Tel: +353 503 31745
Fax: +353 503 43695
iuug-exec@cs.tcd.ie

ITALY - i2u
Ing Carlo Mortarino
i2u
Viale Monza 347
20126 Milano
ITALY
Tel: +39 2 2520 2530

NETHERLANDS - NLUUG
Patricia Otter
p/a Xirion bv
Burg. Verderlaan 15 X
3454 PE De Meern
THE NETHERLANDS
Tel: +31 3406 61 990
nluug@hp4nl

NORWAY - NUUG
Jan Brandt Jensen
Unisoft A.S.
Enebakkvn 154
N-0680 Oslo 6
NORWAY
Tel: +47 2 688970

PORTUGAL - PUUG
Legatheaux Martens
Avenue 24 de Julho, nº 134, 7º
Lisboa
PORTUGAL
Tel: +351 1 673194/609822
Fax: +351 1 7597716
puug@inesc.pt

SWEDEN - EUUG-S
Hans E. Johansson
NCR Svenska AB
Box 1206
S-164 28 KISTA
SWEDEN
Tel: +46 8 750 26 03
hans@ncr.se

UNITED KINGDOM - UKUUG
Bill Barrett
Owles Hall
Buntingford
Hertfordshire SG9 9PL
UNITED KINGDOM
Tel: +44 763 73039
Fax: +44 763 73255
ukuug@ukc.ac.uk

The European UNIX systems User Group
Owles Hall
Buntingford
Hertfordshire SG9 9PL
UNITED KINGDOM
Tel: +44 763 73039
Fax: +44 763 73255
euug@EU.net

CZECHOSLOVALIA - CSUUG
Sekretariat CSUUG
Výpočetni Centrum Vše
Nam. A. Zápotockého4
130 67 PRAKA 3
CZECHOSLOVALIA
csuug@vse.uucp

YUGOSLAVIA - YUUG
Milan Palian
Iskra Delta Computers
Parmova 41
61000 Ljubljana
YUGOSLAVIA
Tel: +38 61 574 554
mpalian@idcyuug.uucp