



AUUGN

AUUG Inc. Newsletter

Volume 15, Number 5

October 1994

The AUUG Incorporated Newsletter

Volume 15 Number 5

October 1994

CONTENTS

AUUG General Information	3
Editorial	5
AUUG Corporate Sponsors	6
AUUG President's Page	7
AUUG Institutional Members	9
AUUG Financial Statement	12
1994 Membership Survey	27
Impressions of AUUG'94	<i>Janet Jackson</i> 29
Hazy recollections of AUUG'94	<i>Adrian Booth</i> 33
Photographs from AUUG'94	<i>Adrian Booth</i> 35
Announcements	
Call for Articles for the Australian	40
New AUUGN Editor Wanted	41
Open System Publications	41
LISA IX Conference	42
5th USENIX UNIX Security Symposium	46
AUUG Local Chapters	
AUUG Regional Contacts	49
6th Annual Canberra Conference and Workshop	50
NSW AUUG Summer Conference	51
AUUG Inc. - Victorian Chapter	53
Victorian Chapter Activities	<i>Enno Davids</i> 54
Perth Summer Technical Conference	56
From the Western Front	<i>Janet Jackson</i> 57
AARNet Mail Affiliation	58
The Internet - On-ramp to the Information Superhighway	<i>Tom Vassos</i> 62
Book Reviews	65
Prentice Hall Book Order Form	72
WoodsLane Information	73
Addison-Wesley Information	74
!AUUGN - from AUUGN Volume 1, Number 4, 5	75

Technical Reports

No You Can't Have Root	<i>Craig Bishop</i>	77
Open Systems Architectural Deployment	<i>Geoff McClelland</i>	86
Getting Performance Data From UNIX	<i>David Purdue</i>	102
Unix Tricks & Traps	<i>Janet Jackson</i>	110
AUUG Membership Categories		112
AUUG Forms		

ADVERTISEMENTS

ZIRCON Systems	8
Softway	50
Prentice Hall Book Order Form	72
WoodsLane Information	73
Addison-Wesley Information	74

Copyright © 1994 AUUG Incorporated. All rights reserved.

AUUGN is the journal of AUUG Incorporated, an organisation with the aim of promoting knowledge and understanding of Open Systems including but not restricted to the UNIX* system, networking, graphics, user interfaces and programming and development environments, and related standards.

Copying without fee is permitted provided that copies are made without modification, and are not made or distributed for commercial advantage. Credit to AUUGN and the author must be given. Abstracting with credit is permitted. No other reproduction is permitted without prior permission of AUUG Incorporated.

* UNIX is a registered trademark of X/Open in the United States and other countries.

AUUG General Information

Memberships and Subscriptions

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

Membership and General Correspondence

All correspondence for the AUUG should be addressed to:-

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

Phone: (02) 361 5994
Fax: (02) 332 4066
Freephone: 1-800 625 655
Email: auug@munnari.oz.au

AUUG Business Manager

Catrina Dwyer,
P.O. Box 366,
Kensington, N.S.W. 2033.
AUSTRALIA

Phone: (02) 959 3656
Fax: (02) 957 6706
Email: catrina@sw.oz.au

AUUG Executive

President	Phil McCrea pmc@atom.ansto.gov.au <i>Watch this space ...</i>	Vice-President	Glenn Huxtable glenn@fs.com.au Functional Software PO BOX 192 Leederville WA 6903
Secretary	Peter Wishart pjw@canb.auug.org.au EASAMS/GEC Marconi Systems PO Box 4806 Unit 7, 10 Kennedy St Kingston ACT 2604	Treasurer	Frank Crawford frank@atom.ansto.gov.au ANSTO Private Mail Bag 1 Menai NSW 2234
Committee Members	Stephen Boucher stephen@mtiame.mtia.oz.au MTIA 509 St. Kilda Rd. Melbourne VIC 3004 Chris Maltby chris@softway.sw.oz.au Softway Pty. Ltd. P.O. Box 305 Strawberry Hills NSW 2021 Rick Stevenson rick@stallion.oz.au Stallion Technologies Pty. Ltd. 56 Sylvan Rd. Toowong, QLD 4066		Lucy Chubb lucyc@softway.sw.oz.au Softway Pty. Ltd. P.O. Box 305 Strawberry Hills NSW 2021 Michael Paddon mwp@munnari.oz.au Kodak 173 Elizabeth St Coburg, Vic 3058

AUUG General Information

Next AUUG Meeting

The AUUG'95 Conference and Exhibition (*The Internet Means Business*) will be held from the 19th to 21st September, 1995, at the Sydney Convention and Exhibition Centre, Darling Harbour, Sydney.

Advertising

Advertisements to be included in AUUGN are welcome. They should conform to the standards of other contributions (see page 5). Advertising rates are \$120 for a quarter page, \$180 for half a page, \$300 for the first A4 page, \$250 for a second page, \$500 for the inside cover and \$750 for the back cover. There is a 20% discount for bulk ordering (ie, when you pay for three issues or more in advance). Contact the business manager for details.

Mailing Lists

For the purchase of the AUUGN mailing list, please contact the AUUG secretariat, phone (02) 361 5994, fax (02) 332 4066.

Back Issues

Various back issues of the AUUGN are available. For availability and prices please contact the AUUG secretariat or write to:

AUUG Inc.
Back Issues Department
PO Box 366
Kensington, NSW, 2033
AUSTRALIA

Conference Proceedings

A limited number of the Conference Proceedings from previous AUUG Conferences are still available, at \$50 for members and \$60 for non-members. Contact the AUUG secretariat.

Acknowledgement

This newsletter was produced with the kind assistance of and on equipment provided by the Australian Nuclear Science and Technology Organisation. A copy of FrameMaker for use in the production of the newsletter has been provided by Platform Technologies .

Disclaimer

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

* Platform Technologies are no longer distributors of FrameMaker, Information Technology Consultants, in Paddington NSW are now distributing FrameMaker.

AUUG Newsletter

Editorial

Welcome to AUUGN Volume 15 Number 5. Well AUUG94 has come and gone, hope everyone that attended, enjoyed the conference. In this issue we have two overviews of the conference, one by Adrian Booth and the other by Janet Jackson. Adrian has also provided some photographs. Two papers that were presented at the conference, but did not appear in the proceedings, have also been included.

Aside from that, there are lots of other administrative items from the conference and elsewhere, *i.e.* Treasurer's Report, membership survey, and announcements for various other conferences.

We also have many of our usual sections, such as the book reviews and reprints from old AUUGN's. Other contributions from members include a paper from David Purdue and Janet's Tricks and Traps section. Some of our other regular sections have been left for the next issues of AUUGN.

Finally, AUUG is still looking for a new editor, we have had some interest, but a decision has not yet been made. If you are interested there is still time to apply, but you had better hurry.

Jagoda Crawford

AUUGN Correspondence

All correspondence regarding the AUUGN should be addressed to:-

AUUGN Editor,
P.O. Box 366,
Kensington, N.S.W. 2033.
AUSTRALIA

Phone: +61 2 717 3885
Fax: +61 2 717 9273
Email: auugn@munnari.oz.au

AUUGN Book Reviews

The AUUGN book review editor is Frank Crawford. Anyone interested in reviewing books or with book reviews to submit for publishing in AUUGN please contact Frank. His address can be found on page two of this issue. Remember, that any books you review, you keep.

Contributions

The Newsletter is published approximately every two months. The deadlines for contributions for the next issues of AUUGN are:

Volume 15 No 6 Friday 25th November

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

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

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

AUUG Inc. Corporate Sponsors

AUUG Inc. is pleased to acknowledge the generous support given by the following corporate sponsors:

The logo for Digital, featuring the word "digital" in a lowercase, sans-serif font. Each letter is contained within a separate black rectangular box, creating a segmented, digital appearance.The IBM logo, consisting of the letters "IBM" in a bold, sans-serif font. The letters are formed by horizontal stripes, with the "I" and "M" having three stripes each and the "B" having four stripes.The Sun logo, featuring a stylized diamond-shaped icon composed of four curved lines forming a square-like shape. To the right of the icon is the word "Sun" in a cursive, script font.

AUUG President's Page

One of the highlights of the AUUG 94 Conference was the 'footnote' talk by Tom Jermoluk, the CEO of Silicon Graphics. Tom's talk was augmented by some fairly slick (or 'funky', to quote Ian Hoyle, the Conference Chairman) graphics produced in real time in full multi-media splendour on an SGI workstation. Tom, who is a dead ringer for the Great White Shark, gave a punchy presentation. It was not one of those gee-whiz looks at the future: it was very here-and-now, since it was all being displayed in real time on a moderately priced workstation - all running on UNIX of course!

Tom reminded us that technological developments in the 70s and 80s were driven by military needs, largely fuelled by the cold war and the space race (anyone remember that?). I remember in my student days in the 70s being informed that the development of microcomputers at that time was driven entirely by military expediency, which depressed me no end: the same technology that could turn on a few light emitting diodes in a laboratory was capable of being used to control lethal weapons.

These days, said Tom, it's not the military that is driving technological change: it's the entertainment industry! Which certainly makes this left - leaning writer feel considerably more comfortable! Even died-in-the-wool red-necks would probably agree this is a turn for the better!

I do not know a primary school kid who is not almost totally obsessed with computer games! Witness the meteoric rise of Nintendo, which has become a household name. Personally I find computer games a little tedious - but what can you expect from someone who grew up with Dinky Toys, Meccano sets, and Airfix kits!

When you think of it, the whole focus of the poorly-termed information superhighway at present is largely on the home, with entertainment being the main driver: video on demand seems to have caught the imagination of almost every armchair Norm. It appears that entertainment and other home-oriented activities such as shopping, library accessing, and video mail will drive the evolution of technology for the next few years.

I'm getting to cringe every time I hear the term information superhighway! Have you noticed how it is generally used by people who don't really understand what the issues really are? Like politicians, for instance...and the advertising industry! It's almost become as hackneyed as the dreaded 'paradigm' word! Well, maybe not quite.

Having derided the term, I should say that I'm actually pleased that the information superhighway is commanding so much media attention. It has served the very useful role of bringing the matter to the attention of just about everyone - and such attention surely must produce something to benefit the nation in the long run.

One of the more positive Government initiatives in this area is the current study by the Broadband Services Expert Group (BSEG), commissioned by Michael Lee, the Minister for Communications. This group has released a very readable interim report a couple of months, with the final report due at the end of the year. To its credit, the authors have carefully avoided the Information Superhighway metaphor, which gives it some immediate credibility. It is a good report to the extent that it is written very much in a tutorial style, and hence serves the purpose of raising the issues and possibilities amongst a much wider audience than would otherwise be the case. It should be compulsory 'aircraft reading' for every politician and business-person in the country.

My only criticism of the report - and such criticism is not confined just to this report - is the fact that the report still has a 'data comms' flavour to it. This is understandable to a certain extent, given that it was commissioned by the Department of Communications: were it commissioned by the Department of Industry, Science and Technology, it would probably have a slightly different focus.

There is a conceptual hurdle required to move from an understanding of data comms to an appreciation of Internet style network services: organisations like Telecom are expert in providing communications linkage between a socket in the wall in one room to a socket in another room elsewhere in the world.

Australia has an excellent telecommunications service, which is being improved all the time by competition.

The revolution in networking will be in the area of value-added network services. We see a glimmer of what is possible from the myriad of services that are available over the Internet at present - and when you can access these services through World Wide Web, it can be truly mind-blowing! Most academics and librarians understand what I am referring to here: somehow we need to imbue the data comms experts who are contributing to the debate with this same sense of understanding - indeed excitement.

Let me reinforce again what I said above - the Internet, along with everything that it promises, has evolved from the same Unix culture of the late 70s and the 80s that spawned the notion of software tools and shareware. We were reminded of this, as well, at AUUG 94 by Dennis Ritchie, one of the co-founders of UNIX.

Forget the term 'Information Superhighway', and watch the Internet space with interest - that's where it's really happening!

Phil McCrea

50% Off AIR Series 3.0™

Upgrade now to the

From **SPRY** Inc

First Commercially Developed Version of Mosaic Available with Suite of TCP/IP Connectivity Applications

Upgrade and get 50%* off the single or site license AIR Series prices, with any competitive product such as, PC-NFS, NetManage Chameleon, Super TCP, PC-TCP and so on and find out why

AIR Series 3.0™ has just been awarded **Editors Choice** by the **US PC MAGAZINE**.

Just send us a proof of purchase and photocopy of the program diskette with your order and get 50% Off.

*Competitive upgrades are based on the standard price list less 50%

AIR Series™ - Editors Choice - PC MAGAZINE Oct 1994



ZIRCON TECHNOLOGIES
925 Botany Road. Mascot NSW 2020
Tel: (02) 317 4055 - Fax: (02) 669 3241
Email: info@zircon.com.au



AUUG Institutional Members as at 13/10/1994

A. Goninan & Co. Limited
AAII
Aberfoyle Resource Limited
ACAY Network Computing Pty.Ltd.
Actrol Parts
ACT Government Computing Service
Adept Software
Advanced Software Engineering
Alcatel Australia
Amalgamated Television Services
Amdahl Australia Pty Ltd
Amdahl Pacific Services
Andersen Consulting
ANI Manufacturing Group
Animal Logic Research Pty. Ltd.
ANSTO
Anti-Cancer Council of Victoria
ANZ McCaughan
Atlas Computer Systems
Attorney-General's Department
Ausnet Services Pty. Ltd.
AUSOM Inc.
Australian Archives
Australian Bureau of Statistics
Australian Centre for Remote Sensing (ACRES)
Australian Defence Industries Ltd.
Australian Electoral Commission
Australian Film Television and Radio School
Australian Information Processing Centre Pty. Ltd.
Australian Museum
Australian National Audit Office
Australian National University
Australian Submarine Corporation
Australian Taxation Office
Australian Technology Resources (ACT) Pty. Ltd.
Australian Technology Resources Pty. Ltd.
Australian Tourist Commission
Australian Wool Research & Promotion Organisation
B & D Australia
Bay Technologies Pty Ltd
BHA Computer Pty. Limited
BHP Information Technology
BHP Minerals Exploration
BHP Petroleum
BHP Research - Melbourne Laboratories
BHP Research - Newcastle Laboratories
Bond University
Burdett, Buckeridge & Young Ltd.
Bureau of Meteorology
Butterworths
Bytecraft Pty. Ltd.
C.I.S.R.A.
Cadcom Solutions Pty. Ltd.
Cape Grim B.A.P.S
Capricorn Coal Management Pty. Ltd.
CelsiusTech Australia
Centre for Open Systems Pty. Ltd.
Chief Secretary's Department
CITEC
Clarity International
Classified Computers Pty. Ltd.
Clegg Driscoll Consultants Pty. Ltd.
Co-Cam Computer Group
Coal & Allied Operations
Cognos Pty. Ltd.
Com Net Solutions
Com Tech Communications
Comcare Australia
Commercial Dynamics
Communica Software Consultants
Composite Buyers Ltd.
Computechnics Pty. Ltd.
Computer De Tokyo Corporation
Computer Law Corporation
Computer Sciences of Australia Pty. Ltd.
Computer Software Packages
Computer Systems (Australia) Pty. Ltd.
Comsys International Pty. Ltd.
Concord Repatriation General Hospital
Continuum Australia
Copper Refineries Pty. Ltd.
Corinthian Engineering Pty. Ltd.
Corporate Workgroup Resources
CSIRO Division of Information Technology
CSIRO Division of Manufacturing Technology
CSIRO Division of Wool Technology
Curtin University of Technology
Customised Software Solutions Centre
Cyberdyne Systems Corporation Pty. Ltd.
Cyberscience Corporation Pty. Ltd.
Cybersource Pty. Ltd.
Data General Australia
Datacraft Limited
Datacraft Technologies
Dawn Technologies
DB Bain Group Services Pty. Ltd.
Deakin University
Defence Housing Authority
Defence Service Homes
Department of Business & Employment
Department of Conservation & Natural Resources
Department of Defence
Department of Defence (TC Section)
Department of Education QLD
Department of Environment & Natural Resources
Department of Family Services &
Aboriginal & Islander Affairs
Department of Planning & Development
Department of State Services
Department of the Treasury
Dept. of Industrial Relations, Employment,
Training & Further Education
DEVETIR
Dialix
Digital Equipment Corp. (Australia) Pty. Ltd.
DSTO, Lab 73
EASAMS (Australia) Limited
Edith Cowan University
Electricity Trust of South Australia
Electro Optics Pty. Ltd.
Engineering Computer Services Pty. Ltd.
Environmental Resources Information Network (ERIN)
Equity Systems Pty. Limited
Ericsson Australia

AUUG Institutional Members as at 13/10/1994

ESRI Australia Pty. Ltd.
Executive Computing
FGH Decision Support Systems Pty. Ltd.
Financial Network Services
Fire Fighting Enterprises
First State Computing
Flinders University
Fremantle Port Authority
Fujitsu Australia Ltd.
G.James Australia Pty. Ltd.
GEC Alsthom Information Technology
GEC Marconi Systems Ltd.
Geelong & District Water Board
Genasys II Pty. Ltd.
General Automation Pty. Ltd.
GIO Australia
Golden Casket Office
Golden Circle Australia
Great Barrier Reef Marine Park Authority
Gribbles Pathology
Haltek Pty. Ltd.
Hamersley Iron
Hansen Corporation Pty. Ltd.
Heath Insurance
Hermes Precisa Australia Pty. Ltd.
Hollywood Private Hospital
Honeywell Australia Ltd.
Honeywell Ltd.
Hong Kong Jockey Club Systems
(Australia) Pty. Ltd.
I.P.S Radio & Space Services
IBA Healthcare Pty. Ltd.
IBM Australia Ltd.
Iconix Pty. Ltd.
Ideas International Pty. Ltd.
Independent Systems Integrators
Information Technology Consultants
Information Technology Services Branch,
Dept of Public Administration
Informed Technology
Insession Labs Pty. Ltd.
Insurance & Superannuation Commission
Integration Design Pty. Ltd.
International Imaging Systems
Internode Systems Pty. Ltd.
ISR Group Ltd.
James Cook University of North Queensland
Joint House Department
JTEC Pty. Ltd.
Keays Software
Knowledge Engineering Pty. Ltd.
Laboratory Systems Pty. Ltd.
Labtam Australia Pty. Ltd.
Land Information Centre
Land Titles Office
Leeds & Northrup Australia Pty. Limited
Legent Australia Pty. Ltd.
Logica Pty. Ltd.
Lotus Development
Lyons Computer Pty. Ltd.
Macquarie University
Main Roads Western Australia
Maintain Axis Computers
Matcom Technologies
Mayne Nickless Courier Systems
Mayne Nickless Information Technology Services
Medical Benefits Funds of Australia Ltd.
Memtec Limited
Mentor Technologies Pty. Ltd.
Mercedes-Benz (Australia)
Message Handling Systems
Metal Trades Industry Association
Mincom Pty. Ltd.
Minenco Pty. Ltd.
Mitsubishi Motors Australia Ltd.
Mitsui Computer Limited
Moldflow Pty. Ltd.
Motorola Computer Systems
Motorola Communications Australia
MPA International Pty. Ltd.
MUA Pty. Ltd.
Multibase Pty. Ltd.
Multiline BBS
Multiuser Solutions Pty. Ltd.
National Library of Australia
National Resource Information Centre
NCR Australia
NEC Australia Pty. Ltd.
Northern Territory Library Service
Northern Territory University
Novell Pty. Ltd.
NSW Agriculture
NSW Teachers Federation Health Society
Object Design Pty. Ltd.
Object Oriented Pty. Ltd.
Object Technology International Pty. Ltd.
Ochre Development
Office of State Revenue
Office of the Director of Public Prosecutions
ONA
Open Software Associates Ltd.
Open Technology Pty Ltd
Opentec Pty Ltd
OPSM
OSIX Pty. Ltd.
OzWare Developments Pty. Ltd.
Pacific Semiconductor Pty. Ltd.
Pacific Star Communications
Peter Harding & Associates Pty. Ltd.
Petrosys Pty. Ltd.
Philips PTS
Port of Melbourne Authority
Powerhouse Museum
PPIT Pty. Ltd.
Primary Industries & Energy
Process Software Solutions Pty. Ltd.
Prospect Electricity
pTizan Computer Services Pty. Ltd.
Public Works Department, Information Services
Pulse Club Computers Pty. Ltd.
Pyramid Data Centre Systems
Qantek
QLD Department of Transport,
Information Tech. Serv. Branch

AUUG Institutional Members as at 13/10/1994

QLD Electricity Commission
Quality Bakers Pty. Ltd.
Quality By Design Pty. Ltd.
Redland Shire Council
Rehabilitation Tasmania
Renison Golfields Consolidated Ltd.
Rinbina Pty. Ltd.
Royal Melbourne Institute of Technology
SCEGGS Redlands Ltd
Sculptor 4GL+SQL
SEQEB Business Systems
Siemens Nixdorf Information Systems Pty. Ltd.
Smallworld Systems (Aust.) Pty. Ltd.
Smorgon ARC
Snowy Mountains Authority
SoftGen Pacific Pty. Ltd.
Software Plus (Australia) Pty. Ltd.
Softway Pty. Ltd.
South Australian Co-operative Bulk Handling
St. Catherine's School
St. Gregory's Armenian School
St. John of God Health Care System
St. Vincent's Private Hospital
Stallion Technologies Pty. Ltd.
Standards Australia
State Revenue Office
State Super (SSIMC)
Steelmark Eagle & Globe
Sterling Software
Storage Technology of Australia
Strategic Information Technologies Pty. Ltd.
Sunburst Regency Foods Pty. Ltd.
Sydney Electricity
Sydney Ports Authority
System Builder Development Pty. Ltd.
Systems and Management Pty Ltd
Systems Development Telecom Australia
TAB of Queensland
TAFE NSW, Information Systems Division
Tandem Computers
Tattersall Sweep Consultation
Technical Software Services
TechNIX Consulting Group International
Telecom (Applied Research & Development)
Telecom Australia
Telecom Australia Corporate Customer
Telecom Network Engineering Computer
Support Services
Telecom Payphone Services
The Far North QLD Electricity Board
The Fulcrum Consulting Group
The Knowledge Group Pty Ltd
The Preston Group
The Roads & Traffic Authority
The Southport School
The University of Western Australia
Thiess Contractors Pty. Ltd.
Thomas Cook Ltd.
TNT Australia Information Technology
Toshiba International Corporation Pty. Ltd.
Tower Technology Pty. Ltd.
Tradelink Plumbing Supplies Centres
Transport Accident Commission
Triad Software Pty. Ltd.
Turbosoft Pty. Ltd.
TUSC Computer Systems
UCCQ
Unidata Australia
Uninet Consulting Pty. Ltd.
Unisys Australia Limited
University of Adelaide
University of Melbourne
University of New England, Dept. of Maths,
Stats & Computer Science
University of New South Wales
University of Queensland
University of South Australia
University of Sydney
University of Tasmania
University of Technology, Sydney
Unixpac Pty. Ltd.
Vanguard Computer Services Pty. Ltd.
Vanoco Pty. Ltd.
Victoria University of Technology
VME Systems Pty. Ltd.
Walter & Eliza Hall Institute
Wang Australia Pty. Ltd.
Water Board
WCS Australia Pty. Ltd.
Western Mining Corporation
Woodside Offshore Petroleum
Work Health Authority
Workstations Plus
XEDOC Software Development Pty. Ltd.
Zircon Systems Pty. Ltd.
Zurich Australian Insurance

A.U.U.G. INCORPORATED

PROFIT AND LOSS STATEMENT

FOR THE PERIOD ENDED 1ST JUNE 1993 TO 31ST MAY 1994.

<u>INCOME</u>	<u>1994</u>	<u>1993</u>
Membership	143565.00	112159.00
Advertising	3501.00	780.00
Subscriptions	1740.00	1908.00
Mailing List	1439.00	1167.00
Interest Received	4067.00	8964.61
Other Income	882.00	424.00
Aaug 93		11210.00
Aaug 94	395.00	
<u>Summer 92</u>		
- Canberra		5555.00
- Melbourne		300.00
- Sydney		60.00
- Perth		2295.00
- Brisbane		4625.50
Summer Conference 92		595.00
Uniform Rebate	40.00	865.52
Netcomm		2930.74
Summer Conference 93	6457.00	11386.50
AARNET Subscriptions	56200.00	33400.00
Summer 94	19079.00	
Modem Sales	24675.00	
A.U.U.G. 93 - Exhibition	68720.00	
	<hr/>	<hr/>
	330760.00	198625.87

LESS EXPENSES

1994

1993

Bank Charges

- Credit Card	2750.00	629.37
- Government	468.00	307.57
	<hr/>	<hr/>
	3218.00	936.94

Management Committee / Meeting Expenses

- Air Fares	15092.10	9467.18
- Accommodation / Meals	1237.30	385.40
- Taxis		276.90
- Refreshments		278.80
	<hr/>	<hr/>
	16329.40	10408.28

Membership

- Refunds		12.00
- Printing		10831.20
		<hr/>
		10843.20

Netcomm 2890.74

AARNET Expenses 75234.35 1000.00

A.U.U.G. - 91 3803.00

A.U.U.G.N.

- Postage / Freight	4709.89	
- Printing	46013.00	33695.63
	<hr/>	<hr/>
	50722.89	33695.63

A.U.U.G. - 94 34216.46

	1994	1993
<u>Summer 93</u>	784.26	
<u>Summer 94</u>	12186.12	
 <u>Secretariat</u>		
- Retainer	2400.00	2400.00
- Other		19468.55
	<hr/>	<hr/>
	2400.00	21868.55
 Chapters - Direct :		
	956.00	
<u>Chapters</u>		
- S.A.	2335.20	
- QLD	5640.00	
- N.T.	427.20	
- N.S.W.	11429.30	
- VIC	5757.60	2199.54
- ACT	2418.00	5777.01
- W.A.	3657.00	663.00
	<hr/>	<hr/>
	31664.30	8639.55
 Membership Administration		
	14209.90	
Modem Costs		
	12160.00	
 <u>Symmetry</u>		
- Retainer		9000.00
- Other		6233.39
		<hr/>
		15233.40

A.U.U.G. INCORPORATED
PROFIT AND LOSS STATEMENT
FOR THE PERIOD 1ST JUNE 1993 TO 31ST MAY 1994
CONFERENCE - AUUG (1993)

	\$
	1994
<u>INCOME</u>	271064.00
<u>LESS EXPENSES</u>	
- Advertising / Promotion Costs	185934.85
- Photocopy / Printing Costs	47971.58
- Travel / Accomodation Costs	13012.80
- Tutorial Costs	13044.37
- Telephone	636.00
- Mailing Costs	22945.77
- Freight Costs	20.80
- Refunds	867.50
- Catering Costs	26601.50
- General Expenses	946.00
	<hr/>
	311981.17
	<hr/>
Net Deficit	<u>\$ (40917.17)</u>

<u>Office</u>	1994	1993
- L. Fraumann / C. Dwyer	33697.28	43216.40
- Advertising	3846.95	3212.62
- Auditors Remuneration	1900.00	1888.75
- Freight / Postage	7213.96	4168.11
- Rent	2828.00	
- Printing / Stationery	11070.11	3002.89
- Telephone	3786.50	4780.47
- Superannuation	357.60	
- Wages	12039.80	12255.00
- Taxis		236.16
- General Expenses	1699.53	2993.00
- Insurance	1150.00	
- Air Fare		320.20
	<u>\$79589.73</u>	<u>\$76073.80</u>
TOTAL OPERATING COSTS	<u><u>\$333671.41</u></u>	<u><u>\$231303.53</u></u>
General A/C Net Profit (Loss)	\$(2911.41)	\$(32677.66)
A.U.U.G. 93 Net Profit (Loss)	<u>\$(40917.17)</u>	<u>\$(2063.19)</u>
NET PROFIT / LOSS	<u><u>\$(43828.58)</u></u>	<u><u>\$(34740.85)</u></u>

A.U.U.G. INCORPORATED

BALANCE SHEET

AS AT 31ST MAY 1994

	NOTE	1994	1993
<u>ASSETS</u>			
CURRENT ASSETS			
Cash		2222.00	8149.43
Receivables	(3)	5709.97	5553.62
Investments	(2) (4)	85252.12	121222.24
Total Current Assets		<u>93154.09</u>	<u>134925.29</u>
NON CURRENT ASSETS			
Furniture & Equipment		7798.00	
Intangibles		988.10	988.10
Total Non Current Assets		<u>8786.10</u>	<u>988.10</u>
TOTAL ASSETS		<u>101970.19</u>	<u>135913.39</u>
LIABILITIES			
Current Liabilities	(5)	9885.38	
Total Current Liabilities		<u>9885.38</u>	
ASSOCIATED FUNDS			
Accumulated Profits		92084.81	135913.39
<u>TOTAL LIABILITIES & CAPITAL</u>		<u>\$101970.19</u>	<u>\$135913.39</u>

A.U.U.G. INCORPORATED

NOTES TO AND FORMING PART OF THE ACCOUNTS

FOR THE YEAR ENDED 31ST MAY 1994

1. **ACCOUNTING POLICIES**

The accounts are prepared in accordance with the historical cost convention. The Accounting policies adopted are consistent with those of the previous year.

2. **INVESTMENTS**

Investments are shown at Market Value, Capital Gains Tax is not taken into account in determining the investments unless a definite decision to sell has been taken and the related Capital Gains Tax can be reliably estimated.

Dividends and other distributions from investments are taken to income on receivable basis.

3. <u>CURRENT RECEIVABLES</u>	1994	1993
Withholding Tax	5709.97	5553.62

4. <u>CURRENT INVESTMENTS</u>	1994	1993
Quoted Investments		
C.B.A. - Term Deposit	36258.55	34596.00
- Cash Management	48993.57	86626.24
	<u>\$82252.12</u>	<u>\$121222.24</u>

5. <u>CURRENT LIABILITIES</u>	1994	1993
Bank Overdraft	9885.30	

CHAPTER - NORTHERN TERRITORY

INCOME & EXPENDITURE STATEMENT FOR THE YEAR ENDING 31ST MAY,
1994

	\$	\$
<u>INCOME</u>		
- Conference Fees	10677.00	
- Tutorial Fees	<u>2775.00</u>	<u>13452.00</u>
<u>LESS EXPENDITURE</u>		
- Advertising	269.90	
- Conference Expenses	3916.00	
- Printing & Stationery	1377.25	
- Registration Fees	304.00	
- Misc. Exp.	473.25	
- Freight Costs	45.85	
- Consultant - (Guest Speaker)	<u>832.50</u>	<u>7218.7</u>
Net Surplus		<u><u>\$6233.25</u></u>

NB

1994 A.U.U.G. National Contribution amounting to \$427.20

CHAPTER - PERTH

INCOME & EXPENDITURE STATEMENT FOR THE YEAR ENDING 31ST MAY,
1994

	\$	\$
<u>INCOME</u>		
- Membership		3020.00
- Interest		24.00
- Mailing List		115.00
- Summer Conference		4263.00
- Tutorial / Workshop		5940.00
		<u>13362.00</u>
 <u>LESS EXPENDITURE</u>		
- Conference Costs - Summer	3637.00	
- Mailing List Costs	3336.00	
- Tutorial / Workshop Costs	2644.00	
- Bank Fees	17.00	
		<u>9634.00</u>
Net Surplus		<u><u>\$3728.00</u></u>

NB

1994 A.U.U.G. National Contribution amounting to \$3657.00

CHAPTER - NSW

INCOME & EXPENDITURE STATEMENT FOR THE YEAR ENDING 31ST MAY

1994

	\$	\$
<u>INCOME</u>		
- Donations	2750.00	
- Activities Income	4.00	
- Subsidies	12236.00	
- Conference Registrations	12780.00	
- Interest	<u>63.00</u>	27833.00
 <u>LESS EXPENDITURE</u>		
- Advertising	394.00	
- Catering	3353.00	
- Stationery	343.00	
- Postage & Shipping	1518.00	
- Printing & Copying	1866.00	
- Room Rental	700.00	
- Honorariums	4483.00	
- Equipment Rental	120.00	
- Bank Charges	75.00	
- Other Expenses	<u>25.00</u>	<u>12877.00</u>
Net Surplus		<u><u>\$14956.00</u></u>

NB

1994 A.U.U.G. National Contribution amounting to \$11429.30

CHAPTER - QUEENSLAND

INCOME & EXPENDITURE STATEMENT FOR THE YEAR ENDING 31ST MAY
1994

	\$	\$
<u>INCOME</u>		
- Sponsors	2729.00	
- Interest Received	147.00	
- Conference	3700.00	
- Workshop	7025.00	
- Trade Show	460.00	
- Book Sales	746.00	
- Other Income	<u>2035.00</u>	16842.00
 <u>LESS EXPENDITURE</u>		
- Bank Charges	14.00	
- Office Expenses	10.00	
- Postage	45.00	
- Meeting Expenses	1881.00	
93 Summer Conference Exp	200.00	
94 Conference Expenses	4299.00	
94 Unix Workshop Expenses	1424.00	
94 Perl Workshop Expenses	1593.00	
94 Trade Show Expenses	250.00	
- Book Sales Expenses	768.00	
- Consultant Fees	1765.00	
- National Payment Costs	<u>290.00</u>	<u>12539.00</u>
Net Surplus		<u><u>\$4303.00</u></u>

NB

1994 A.U.U.G. National contribution amounting to \$5640.00

CHAPTER - CANBERRA

INCOME & EXPENDITURE STATEMENT FOR THE YEAR ENDING 31ST MAY
1994

	\$	\$
<u>INCOME</u>		
- Sponsorship	250.00	
- Conference & Workshop Registrations	21015.00	
- Other (93 Conference Receivables)	7076.00	
- Interest Received	<u>132.00</u>	28473.00
<u>LESS EXPENDITURE</u>		
Postage	810.00	
General Meetings	849.00	
Dial Up Service	1502.00	
Bank Charges	31.00	
Conference Costs	6680.00	
Workshop Costs	5760.00	
Tutorial Costs	<u>461.00</u>	<u>16093.00</u>
Net Surplus		<u><u>\$12380.00</u></u>

NB

1994 A.U.U.G. National contribution amounting to \$2418.00

CHAPTER - SOUTH AUSTRALIA

INCOME & EXPENDITURE STATEMENT FOR THE YEAR ENDING 31ST MAY,
1994

	\$
<u>INCOME</u>	
- Summner Conference - (94) Fees	3890.00
- Interest	13.00
	<hr/>
	3903.00
<u>LESS EXPENSES</u>	
- Bank Fees	73.00
- Petty Cash	180.00
- Mailing Costs	20.00
- Entertainment Costs	760.00
- Summer Conference - 94 Costs	872.00
- Consultant Fees	1415.00
	<hr/>
	3320.00
	<hr/>
Net Surplus	<u>\$ 583.00</u>

NB

1994 AUUG National Contribution amounting to \$2335.20

CHAPTER - VICTORIA

INCOME & EXPENDITURE STATEMENT FOR THE YEAR ENDING 31ST MAY
1994

INCOME

- AUUG Membership Fees	5479.20
- BSD Workshop 94	3936.70
- BSD Refunds	10.00
- Bank Account Interest	26.54
- Donations	56.00
	<hr/>
Total Income	<u>9508.44</u>

LESS EXPENDITURE

- Technical Meetings	1320.50
- Clunies Ross Foundation Accreditation	100.00
- Credit Tax	8.81
- Debits Tax	14.46
- Receipt Book	2.00
	<hr/>
Total Expenditure	<u>1445.77</u>
Net Surplus	<u><u>\$8062.67</u></u>

NB

1994 A.U.U.G. National Contribution amounting to \$5757.60

**AUDITOR'S REPORT to the Members of the
AUSTRALIAN OPEN SYSTEMS USERS GROUP INC.**

Scope

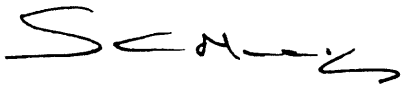
We have audited the attached financial statements of the A.U.U.G. Incorporated for the year ended 31st May 1994. The Groups Committee are responsible for the preparation and presentation of the financial statements and the information they contain. We have conducted an independent audit of these financial statements in order to express an opinion on them to the members of the Group. Our audit has been conducted in accordance with Australian Auditing Standards to provide reasonable assurance as to whether the financial statements are free of material misstatement. Our procedures included examination, on a test basis, of evidence supporting the amounts and other disclosures in the financial statements and the evaluation of accounting policies and significant accounting estimates. These procedures have been undertaken to form an opinion as to whether, in all material aspects, the financial statements are presented fairly in accordance with Australian accounting concepts and standards and statutory requirements so as to present a view of the Group which is consistent with our understanding of the Group's financial position and the results of its operations.

The audit opinion expressed in this report has been formed on the above basis.

Audit Opinion

In our opinion, the Balance Sheet, Statement of Income and Expenditure and Notes to the Accounts of the Group are properly drawn up:

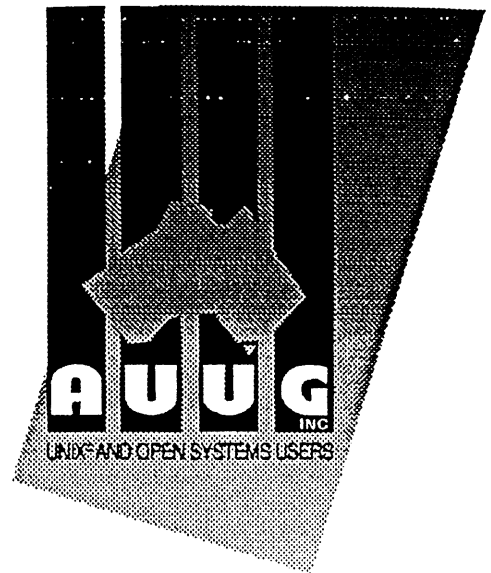
- (a) so as to give a true and fair view of:
 - (i) the state of affairs of the Group as at 31st May 1994 and its loss for the year ended on that date; and
- (b) in accordance with Statements of Accounting Concepts and applicable Accounting Standards.



NICOL & NICOL
Certified Practising Accountants

Stuart C. Nicol CPA
Melbourne September 1994.

1994 Membership Survey



Executive Summary

The following survey results reflects 402 respondents.

The 1994 AUUG Inc. membership survey shows the predominant age of members to be between 25 and 44, having graduated from a 4 year university. 38% of the respondents have 1-5 years of experience with the UNIX operating system and 33.5% have 6-10 years experience. The primary job function is split between the Exec/Sr. Mgr., MIS Mgr, Sys. Administrator and Consultant, with almost double the number of System Administrators to MIS Managers. Applications used by those surveyed most often are in areas of Networking, Communications and Software Development with Database Management running a close 4th.

In addition to the associations listed, SAGE - AU is emerging as an affiliate of choice for respondents. UNIX World is the publication of choice with Open Systems Review close behind. AUUGN and Computer World take joint third place. An overwhelming 79% of respondents use e-mail for communications, and have the connection provided by their employer/institution. The top 3 primary business activities are in: Software Development, Government/Military, and Education, with over 50% employing under 100 people. The predominant "version" of UNIX used by the respondents employers is SunOS (60%) with SVR4 and SCO trailing behind with 37% and 31% respectively. When asked to specify other UNIX versions used but not listed, Linux proved to be a popular choice. Respondents were also asked to specify other non-UNIX operating systems used in the work place. Not surprisingly, MS-DOS and Windows dominated, with Apple Macintosh trailing in 3rd place. In relation to UNIX, DOS and Windows make up more than 50% of corporate use.

The length of membership for respondents is spread evenly across the board between 20% and 28%, from less than one year to 5 years and over. An overwhelming majority (85%) have never submitted a paper to AUUG for use at the conferences. Of those submitted 75% are presented at either the Summer or Winter conferences.

Over 50% of respondents feel that the establishment of Local Chapters has encouraged their participation in AUUG, citing increased activities and peer contact as the greatest benefit. The majority of negative responses came from new members who had not yet had time to evaluate their participation in AUUG. Many respondents also felt that their participation in AUUG through Local Chapters was hampered by distance from Chapter meeting venues. This should change with the continued growth of AUUG and the increased demand for Local Chapters outside of main metropolitan areas. Chapter Activities of greatest interest to respondents are Free/Low cost Internet access, CD-ROM library of public domain software and a Help List of contacts for specialist questions.

SIGs have received a strong vote of confidence, especially in the areas of Networking, System Administration, TCP/IP and Security. The quest for leaders will be a challenge as over 86% indicated the lack of time available to lead such an activity. 72% have indicated a Moderate to Highly Technical Level of presentation to be associated with the SIGs which may necessitate offering a Business/End User session on a separate and less frequent basis.

The majority of those responding felt AUUG currently meets their needs; the most cited reasons remain:

- Peer contact at Local Chapter meetings
- Information is relative
- " Keeps me up to date"

Reasons most cited for not meeting needs are:

- Too focused on "commercial" issues at the Winter Conference
- Not enough focus on business/end user needs generally
- Product information needs to be available

Reason for no response cited was most often a new member still accessing the organisation. Value was split fairly evenly between Summer Conferences, *AUUGN*, Network Access discounts and Book discounts. The most valued benefit was the Winter Conference Discount. Suggestions for improvements were:

- Book Discounts from major retailers as well as from publishers
- More mid-year "workshops" (e.g. Kirk McKuisick)
- Regular updates on member benefits
- More Real World Articles in *AUUGN*

It should be noted several of the cited improved benefits are in various stages of discussion or implementation.

Impressions of AUUG '94

As usual, the AUUG Annual Conference and Exhibition was a week-long party and talkfest. However, in between meals, chat sessions, exploring the exhibition and having a go on the virtual reality game, I managed to attend a tutorial and many of the combined-stream and technical talks.

Monday

The redeye special was relatively pleasant for once: Glenn and I were upgraded to first class due to a mixup in the bookings. Don't get used to this, I said to myself as I settled back into the plush seat.

I spent the morning trying to shop, but didn't have much success, despite Melbourne's reputation as the shopping capital of Australia. Maybe next time I should go on one of those shopping tours. However, I expect a tour with the right combination of bookshops, music shops and boutiques would be rather hard to come by.

On Monday evening I had the dubious privilege of being an observer at an AUUG committee meeting, which was held at a Malaysian restaurant whose name I forget. I figured this would be better than having dinner alone. The food was pretty good, but the conversation somewhat uninspiring — I guess it was even more so for Gene Spafford, who had also come along for much the same reason as me. I was told that yes, they usually did spend most of their meetings in lengthy discussions of financial matters.

Tuesday

On Tuesday I attended **Tom Christiansen's** all-day Perl hackers' BOF, I mean Perl 5 tutorial. My worries that it would be too introductory were needless: as advertised, it was about the differences between Perl 5 and Perl 4. A few of the attendees hadn't done any Perl before, and after about 5 minutes probably wished they'd gone on a shopping tour instead. Tom, who is about ten years younger than I'd imagined, is a competent presenter. Being the world's number 1 Perl guru other than Perl's author Larry Wall, he was able to go into plenty of detail.

Wednesday's highlights

Joe Adamski, Executive Manager of Information Systems at Barwon Water, gave a keynote talk that I wished I'd heard a year earlier. Entitled *IT — just another business tool*, it explained in depth the conception and implementation of a corporate IT strategy based on open systems, replacing the traditional EDP environment. Of particular interest to me was the timescale. Joe said that "long term" planning should mean 10-25 years, and that major benefits from a strategy should be expected after about five years. This seemed to be about right in the case of Barwon Water. I guess the figures vary between organisations, but I was working in an environment where three months was a long time, and chaos therefore unavoidable.

Some people I talked to thought Joe's talk was dull, and maybe I would have said the same thing a few years ago when my own focus was almost totally technical. However, now that my interests also include the management aspects of systems administration, I found it pretty exciting.

Having keynote talks by major users rather than vendor bigwigs is a great idea, and seems appropriate — we are a user group, after all.

Dennis Ritchie gave two talks in one. The first presented a thoughtful and informed analysis of the history of Unix, arguing that the reasons for its success — chiefly simplicity and portability — are also the cause of many of its problems. The simple computational model means that Unix presents itself as an operating system, not as a user tool; therefore it is simple for the systems person, but not for the end user. The portability has caused diversity, and hence non-interoperability and conflict between contributors.

The second half of Dennis's talk described Plan 9, the operating system currently being developed at Bell Labs. The technical details were not new, but what I had not heard before were the motives behind Plan 9's development: to adapt the ideas behind Unix (which is 25 years old) to the current world, with its networks, bitmapped graphics and much more powerful hardware. Contrary to what some people think, Plan 9 is a macrokernel, but is much smaller than any microkernel. The demo disk fits on one 3½" floppy, and the development system on three.

Linus Torvalds, the major author of Linux, gave an entertaining sales pitch for a free product. However, he was preaching to the converted: when he asked how many of the audience had used Linux, at least two-thirds raised their hands.

Greg Rose reported on the recent Uniform New Zealand and Usenix parties, I mean conferences, in his usual style, sneaking the content in among the fun. The hot topic at Usenix, as at AUUG, was security and firewalls, and especially the US government's Clipper encryption chip. The idea of this is that by using Clipper-equipped phones, you can hold an encoded phone conversation which Uncle Sam, after a certain amount of red tape, can break if it needs to in order to save the world, or whatever. Parties other than the US government are not supposed to be able to break the code. However, as Greg explained, a talk at Usenix described how someone at Bell Labs had broken it, and the resulting furore led to the government backing down on the issue.

I had opted (and paid) for the **sit-down lunch**, which was a mistake. Although the food was quite good, with full table service the meal took up the entire lunch hour, leaving no time to look round the exhibition. I would have preferred a buffet that I could have eaten at my own pace.

After lunch **Merik Karman** of the Defence Housing Authority gave a talk on IP multicasting. After an overview of IP multicasting in general, and of the available tools, he described how his organisation's systems administrators used it to communicate with one another over an ISDN wide area network. Audio teleconferencing was particularly effective for them, as it didn't interfere with the other work on their screens.

Merik had intended to use the video projector to show slides straight from his notebook PC, but this refused to work, so Merik spoke without visual aids, using his slides only as a guide for himself. Despite this, the presentation was informative and easy to follow, and I don't think anyone really minded not seeing screen shots of the various multicasting applications.

In the footnote talk, **Bob Glass** of SunSoft, with the help of a Sun "concept-car" video, expounded his vision of *High-productivity interfaces in 2004*. I agree with Bob that user interfaces should focus on getting work done, not on the "plumbing", and that increasing the bandwidth of communication between people and computers is a good thing. However, it seemed to me that Bob wanted user interfaces to support stupidity — like disorganised work habits, bad management practices and workaholism.

Thursday's highlights

Thursday started with another user keynote, by **Michael McMullan** from the Road Traffic Authority (RTA) of New South Wales. He described how the RTA had replaced its paper-and-MVS-mainframe registration and licensing system with a Unix-based OLTP system. The initial proposal was made back in 1987, when moving commercial systems to Unix was considered risky. However, despite some teething problems caused by inadequate hardware, the move has paid off in many ways.

Gene Spafford brought in all the late sleepers with his sobering analysis of the security and privacy issues that are becoming increasingly important with the broadening social role of electronic information and networking (from the global to the toaster level). Gene gave us many hard questions to think about, such as how do we find the right balance between freedom and privacy of information? The impression I got from Gene's talk (and from the general media hoopla that's going on at the moment) is that the party's over, and society at large is going to be making the decisions that until now have been the domain of computing people.

Mark Arnold from the University of Wollongong, who won the Best Student Paper award, described a case study he had done on network security in his university department. He discussed his analysis of security threats, including the possible goals and actions of a potential attacker, and the usual tradeoff between security and convenience. He had based his criteria for securing networking applications on authentication and privacy. To test the ideas and algorithms, he had developed a security-enhanced version of the familiar *talk* application. Secure Talk authenticated the users at both ends, and used encryption to give them a private communication channel.

Thursday afternoon's **Technical Panel** on Practical Security went very well. The panelists were **Greg Rose**, **Ken Day** (from the Federal Police), **Paul Gleeson** (from Russell Kennedy Solicitors), **Gene Spafford**, and **Danny Smith** (from AUSCERT). They made many useful points about computer security, and the audience asked thoughtful questions.

Greg suggested that rather than being hysterical, you should treat computer security as you would home and contents security: first, assign value to what you are protecting (information, hardware, etc), then decide how much to spend on its security.

Gene made similar points: you need to be aware of what you are protecting, establish sensible policies, and determine how much to spend. Also, he said, you need to educate users to make them part of the security plan, rather than antagonists; you need to give authority — to enforce, to investigate — to the person responsible for security; and you should pressure vendors to improve security by fixing bugs, announcing patches, and providing secure initial configurations.

Ken said that security starts with management: they must be committed to it. (The necessity of management support for computing initiatives seemed to be a constant theme at this conference.) It is important to carry out a risk assessment, and to realise that data security and hardware security are not the same, because data and hardware often have very different values to the organisation.

Paul said that IT people need to become more aware of the laws related to computer security, particularly in the areas of compensation, procedures, deterrents and covering yourself against trouble. He said that (contrary to common conceptions) security threats are usually internal, coming from an organisation's own employees. Therefore, terms of employment should be in writing, and cover areas such as confidential information.

Danny said that over 50% of Unix systems that are compromised are done so via *trusted systems attack*, that is, via *.rhosts* files, identical passwords across multiple hosts, and so on. This highlights the ever-present tradeoff between security and convenience. Danny encouraged those whose systems are breached to talk to CERT and the police. He also stressed the importance of having a redundancy plan, and good backups and clean distribution media to provide a stable place to fight from.

In the morning tea break I attended the BOF (Birds of a Feather session) on **Women in Open Systems**, organised by Lucy Chubb. (Thanks Lucy!) Five women turned up, and one man who was sympathetic to the concerns of women working in the computing field. Of the five women, two — both systems programmers — had experienced outright discrimination because of their gender, one having an ongoing problem at her current workplace. All of us said we had experienced feelings of isolation because we are so much in the minority among all the men in the computing field. Some positive aspects were also pointed out, such as that it is easier for women to have a high profile because we already stand out. Our male Bird :-) said that the difficulties faced by a woman are often not obvious to a man, even if he supports women's rights, until someone explains them to him. The message for women is that we should speak up!

The BOFs in general were inadequately publicised — not announced during the conference sessions, and difficult to find in the conference programme.

I felt there should have been a break between the Annual General Meeting and the **Gala Dinner**, so people could freshen up and change their clothes without having to miss the "cocktails" as I did. But never mind — the rest of the occasion more than made up for it. If you missed this year's dinner you missed a helluva night. AT&T sponsored the event and although their TV commercials were a bit heavy-handed, it seemed they had done great things for the budget. So what if there were no balloons? We entered the banquet hall to Bowie's *Space Oddity*, through an airlock-style entrance with eerie lighting and smoke effects. The hall was decorated in a space-age theme, with "robots", large video screens which showed space scenes for most of the night (AT&T commercials were also shown), and a spaceball ride. As if all that wasn't entertaining enough, we were treated to comedian Elliot Goblet (& Goblet), who gave a hilarious new meaning to "Microsoft" (if I say any more I'll probably infringe copyright, but just ask anyone — especially any woman — who was there), and a band, The Swinging Sidewalks, who were vastly better than the forgettable bunch of '92. I actually danced, and what's even more amazing, managed to get Glenn onto the dance floor for the final number.

After the band had packed up and the drinks were off, several of us who for some reason didn't feel like going to bed went off to a nightclub, which turned out to be full of young kids (and I mean young! The youngest of our party was probably Linus Torvalds, who would have been about six years older than most of them) dancing to frenetic techno music. This club was suggested by Ian Hoyle, who claimed that "one of the girls at the front desk" had recommended it. I wonder how old she was? Anyway, the place sold Cascade lager, so it wasn't all bad, and we stood around for a couple of hours shouting at one another over the music.

Someone said that another group spent much of the wee hours in the terminal room (which, by the way, was much bigger and better than at previous conferences) ordering pizzas and doing other geek-things.

Friday's highlights

Having somehow managed to get up, stuff my clothes randomly into my suitcase and check out of the hotel, I arrived halfway through **PJ Plauger's** talk on *The Standard C++ Library*, saying hello on the way to Linus, who was even paler than normal, and Ian, who looked almost as awful as I felt. C++ standards is not a subject that excites me, especially when I'm hung-over and sleep-deprived. But despite the dryness of the material, Plauger managed to present it with a good deal of panache. The overall impression I got was that good progress is being made, even though the standards committee process is tortuous.

Nicholas Derchak from Unisys gave what I often describe as a soft-sell, marketing-technical talk. I don't think this kind of talk is technical enough for the technical stream; however, it doesn't belong in the management stream either. I noted some interesting points about how the mainframe/mini/micro categories we learnt about at uni have changed. The mainframe culture is alive and well in a new guise: big-iron Unix boxes, for example, a Fujitsu running Oracle. Minicomputers have been replaced by networks of workstations and small servers. Micros are still micros; they run various operating systems and software, but the clients of the "new mainframes" tend to be PCs running Windows. I don't think any of those were the main points of Nicholas's talk, which was on scalable parallel architectures, but they were the points that struck me as important enough to note down.

My notes for Friday also include "Turning down the lights sends me to sleep." However, it was not possible to sleep during the closing presentation by **Tom Jermoluk** from Silicon Graphics, entitled *Software strategies for the Information Super Highway*. Besides being a fast-talking, dynamic presenter, Tom had a veritable extravaganza of slides, movie segments and also graphics generated in realtime. (We couldn't have a SGI presentation without realtime graphics, now could we? Maybe I'm a cynic, but these things don't impress me any more than the rotating teapots of yesteryear, unless I can see how they'll be useful.) Tom presented a high-gloss view of what the Much-Mentioned Motorway could look like. It means different things to different people, but to SGI it seems primarily to mean video-on-demand, with large SGI servers supplying the supposed demand. Also pizza-on-demand, banking-on-demand, and home-shopping-on-demand, with consumers (we can hardly say "users") navigating a sort of virtual shopping town.

I thought Tom's talk needed modification for a non-American audience who don't, for example, have cable TV. Nevertheless, it made an entertaining, and to some extent thought-provoking, close to the conference.

In summary

I thought that while the quality of the technical talks was somewhat lower than at previous AUUGs I have attended, the keynote, plenary and footnote talks were much better.

I haven't said much about the exhibition, but, as always, I enjoyed it and found it useful. Giving awards for the best displays is a great idea.

In terms of networking (alright, socialising) AUUG '94 was great. I think the World Congress Centre is a better venue than Darling Harbour for networking, as the exhibition hall is close to the conference rooms, making it easy to wander back and forth, meeting colleagues along the way. And the conference dinner was terrific!

Janet Jackson <janet@dialix.oz.au>
From WAUG, the WA Chapter of AUUG

Hazy recollections of AUUG94

Adrian Booth

Arena Technology

Disclaimer: as some people have commented, I was hardly present during much of the conference (even when I was there in body :-). I apologise profusely to those people who I should have spoken with and/or assisted while I was(n't) there, particularly the Gurus. It was a great conference though, and there are some flashbacks that stand out.

Dennis' talk was very enjoyable, except that it was marred by the fact that just as he started to say something interesting, he had to skip forward a bit since his talk had started late. Several people I spoke to were disappointed with Dennis' talk - I'm sure that had he had his full time available, it would have been much better. I'd rather had cut into morning tea and heard his full talk, though the caffeine-deprived in the audience may have started a riot at such a suggestion...

I was fortunate enough to be chairing the first Technical session, which was great since they were the main three talks I wanted to attend. Linus' talk was excellent - he really is a natural and gifted speaker (especially in a second language!). He asked during the introduction to his talk how many people in the audience had used Linux - about 80% of the attendees raised their hands!

Art Sabsevitz of Novell gave a talk, "A CORBA Compliant Framework for OS Serverisation". Unfortunately, I found that the talk was about as informative as its title: it was *very* high level. More technical detail would have been welcome, especially as it was over in exactly 20 minutes! (Which meant that the next talk started early, so people who had changed streams to hear the third talk of the session arrived just as the questions started :-).

Greg Rose gave the third talk of the session, a report on his attendance at the UniForum NZ and USENIX Summer conferences. As expected, a very entertaining talk, and a great advertisement for both events. One day maybe...

I had some other business to take care of in Melbourne during the week, which meant I missed most of the rest of the afternoon, including the Guru sessions that were on that lunchtime. Greg Rose's on perl was a disappointment (with only a few people, mainly asking "What is a perl and should I learn it?"), but Peter Elford's on Internetworking attracted about 40 attendees with meaty questions.

The cocktail party was also a bit of a disappointment: even if I had had plans to drink as much as last year, I would have found it very difficult! The food was scarce and uninspiring, and the drinks not very plentiful (despite the gallant efforts of our illustrious Chairbeing, Ian Hoyle, to offer everyone in the room a topup from his own seemingly inexhaustible bottle of red wine). Although the conversation made up for these problems, I joined a group of fellow sandgropers and we held our own *real* night out, after which I conscientiously decided that I'd better write some notes for my talk the next day...

...which explains why I missed the keynote on day 2, on DRIVES.

Gene "spaf" Spafford gave an interesting and thought-provoking talk on computer security, with the overriding theme that just because something *can* be done with technology, doesn't mean that it *should*. (I thought that this was an excellent point that many technocrats seemed to miss: it seems to me that our ability to socially and morally adjust to new technology is much lower than our ability to create it, and if someone wants to discuss this idea over a bottle of red they're more than welcome).

I had to person the AUUG stand in the exhibition that afternoon, so took the morning to wander around the Exhibition. It was big, but not as gimmicky as last year's (whew!). I wasn't pounced upon by any salesdroids, and didn't come home with several kilograms of brochures.

However, I didn't find it particularly interesting either: the particularly sexy displays were invitation only (a winner drawn from a business card barrel), and the few drawcards (having your photo taken in a 13 tonne Army tank) didn't attract me (although I would have liked to win any one of the bottles of champagne being raffled on several stands). The exhibition was really only good for wandering around and bumping into other people. It was especially interesting to finally meet the famous Dr. Buzz Word of Informating Middleware (yes, that is his real name) - he didn't look at all like I expected!

Manning the AUUG stand was not a very arduous task, especially with the help of two charming assistants :-). Reactions to the delegates gift (a mouse mat) were mixed, from dismay ("you mean it isn't a T-shirt?"), to boredom ("oh, a mouse mat"), to excitement ("oh, a MOUSE MAT!!!!"). I was disappointed in them myself; it was a great idea but the final result wasn't very inspiring.

I'd been given several different stories on how long and how "special event" my evening talk was supposed to be, so I was relieved when the final call was to talk until my notes ran out, and then stop. I was both pleased and horrified by the number of people who hung around to hear it, but very happy with the enthusiastic response: people ran down the front afterwards to share more information, and people were approaching me all the next day with anecdotes. I hope those people remember to email them to me!

The AGM was a bit long, with everyone wanting to say exactly the same things, except for the person down the front who wanted to know why wasn't AUUG scalping people market rates for its events, and why weren't we having a conference in Queensland? (Heck, for people like me who have to fly halfway around the world to get to it anyway, I don't see why not - I second Berny Goodheart's suggestion that AUUG96 be held on Hamilton Island! :-)

The conference dinner was a *blast*: especially after I'd been on the SpaceBall ride! I used one and a half rolls of film, and am including some photos with this article. A significant proportion seemed to be of my dance partner (I hope her toes have recovered); this must have been when I asked someone else to look after my camera for a while...

Everyone I have spoken to agrees with me on two things: Elliott Goblet was *very* funny, and we can't remember a single one of his jokes :-). The band were absolutely fantastic too, we should make them an AUUG Conference Dinner staple!

I crashed in a big way that night, and struggled to get to Deborah "my toes hurt" Bunker's talk at 11am the next day. It was a great talk, and wonderfully refreshing too, mainly since Deborah kept the lights very dim for some reason :-). Several people around me in the audience didn't seem to appreciate her talk, mainly since it was demonstrating that despite all of the marketing hype, open systems is *not* a mature technology. Sure, Unix workstations are mature, and networking is mature, but there are few off-the-shelf solutions to real business problems - organisations that adopt open systems often have to come up with their own solutions to problems instead of customising existing functionality. I mean, how ludicrous is it that you have to buy a third-party product or write your own software - even if it is just shell scripts - to back up your network?

Another message from her talk was that open systems are allowing organisations to move from very hierarchical to very organic structures, which made sense to me but seemed lost on many of the people nearby, even after Deborah described one of the organisations involved in her case study.

Other commitments led me to missing most of the closing talk; I'm told I missed some very sexy graphics, but after losing count of the number of times the speaker used the dreaded P- word in the last 15 minutes, I wasn't that disappointed.

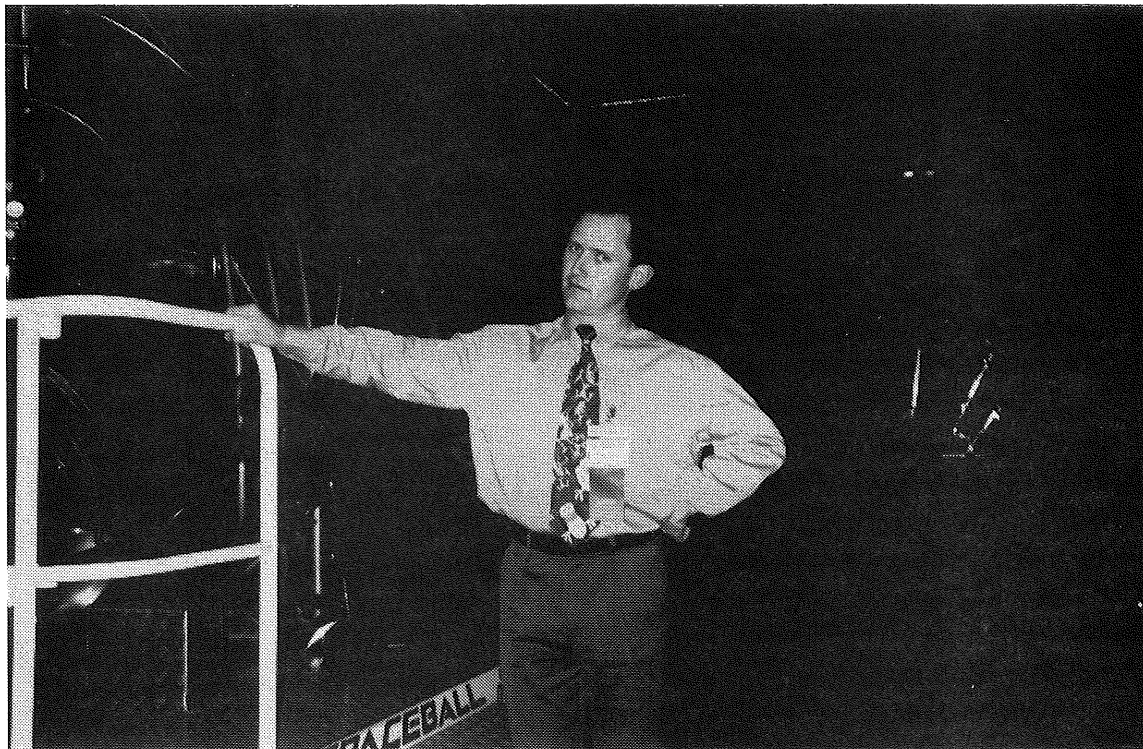
AUUG94 was cool! We had a record attendance (which is especially good, since Melbourne attendance numbers are usually down on Sydney). I made lots of new friends, even though I didn't catch up with as many old ones as I would have liked. And the feedback I got during the three days was uniformly excellent. The AUUG95 conference committee have a big task ahead to top this one...

Photographs from AUUG'94

(Photographs and comments by Adrian Booth)

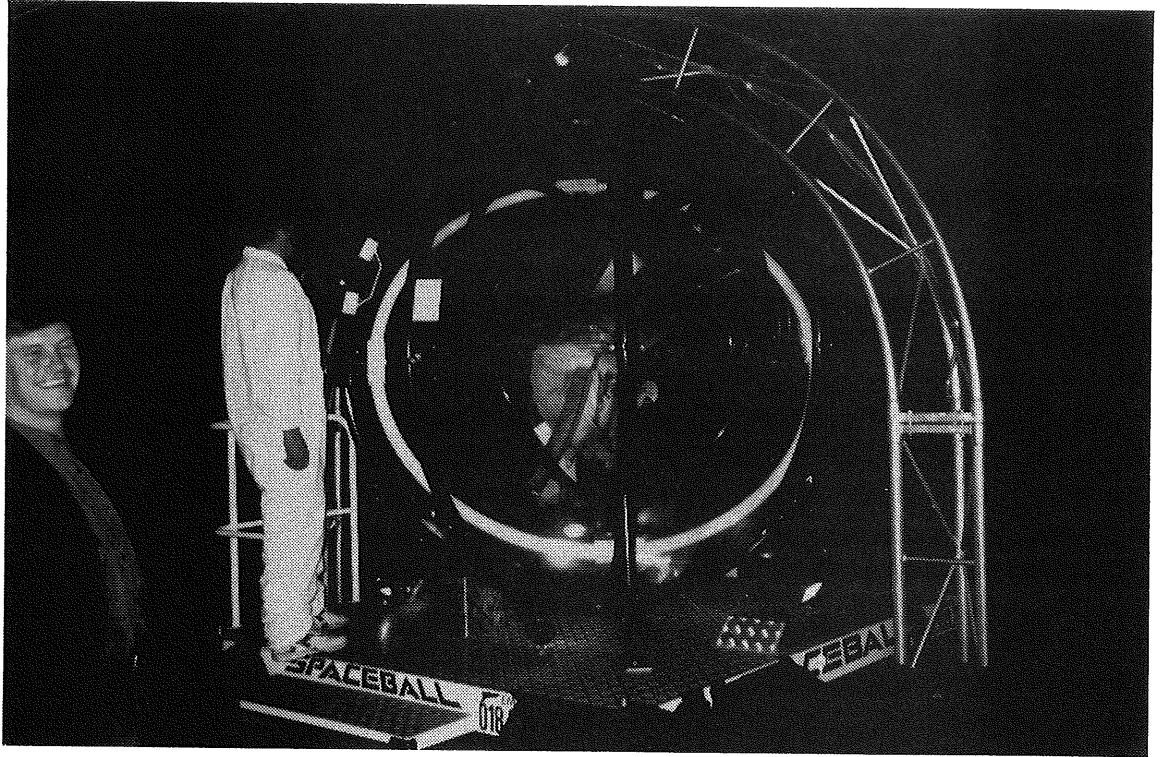


It's great catching up with old friends.

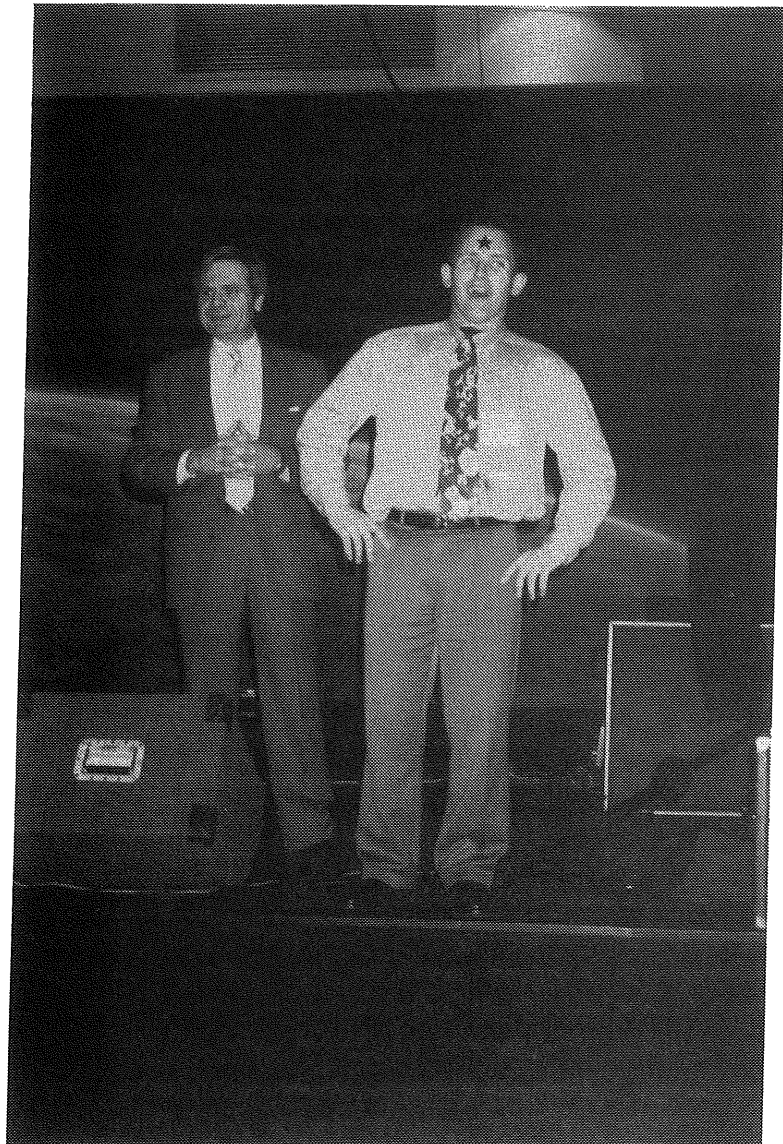


Our illustrious chair about to enter the Wheel of Death ...

... on the WoD ...

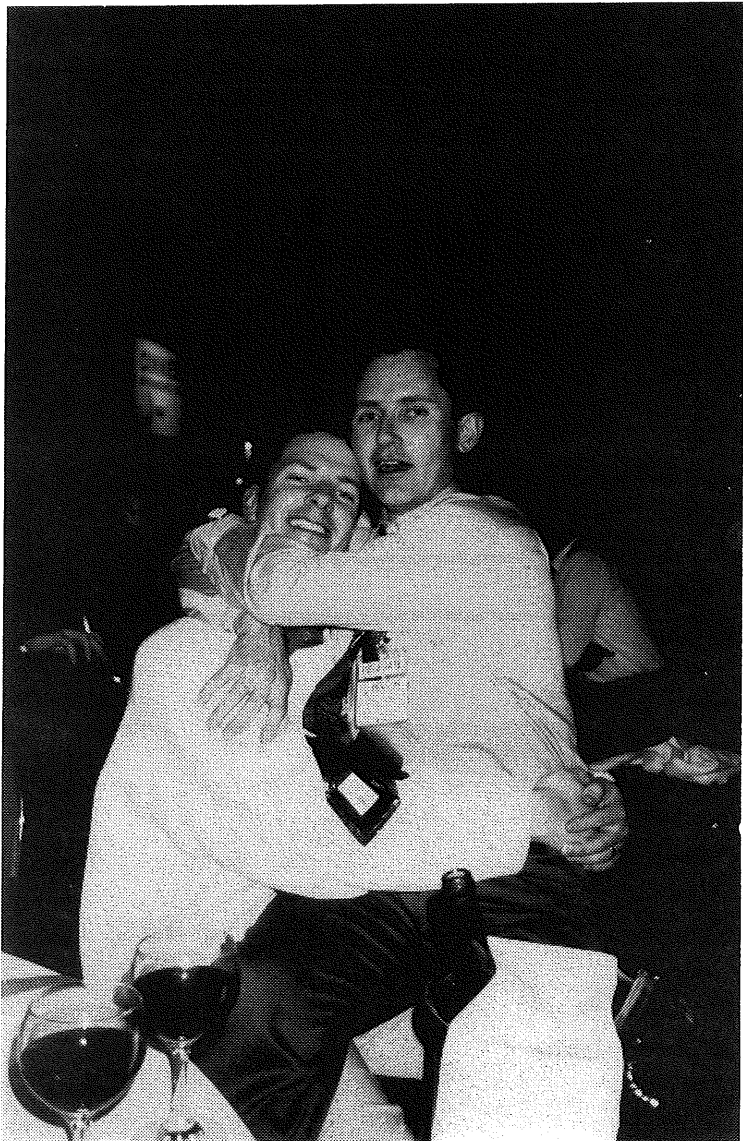


... and it's effect
"99 green BOTTLES ..."



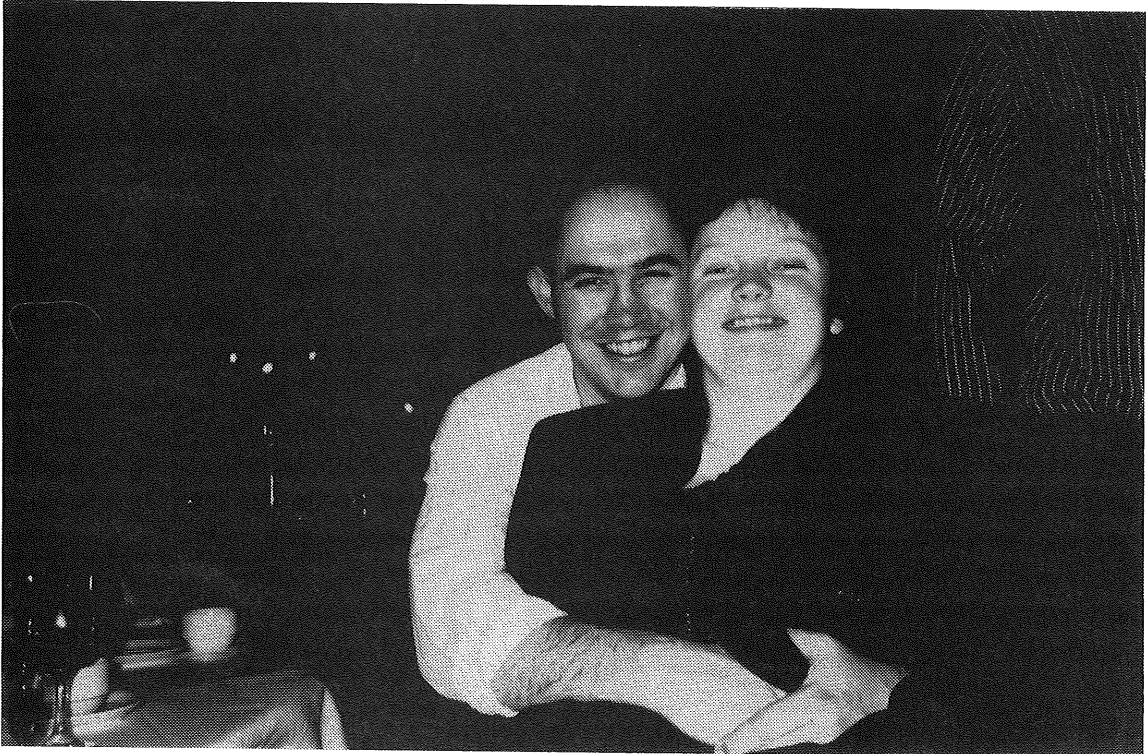


I *thought* Catrina had too much to drink, look how blurry she is!

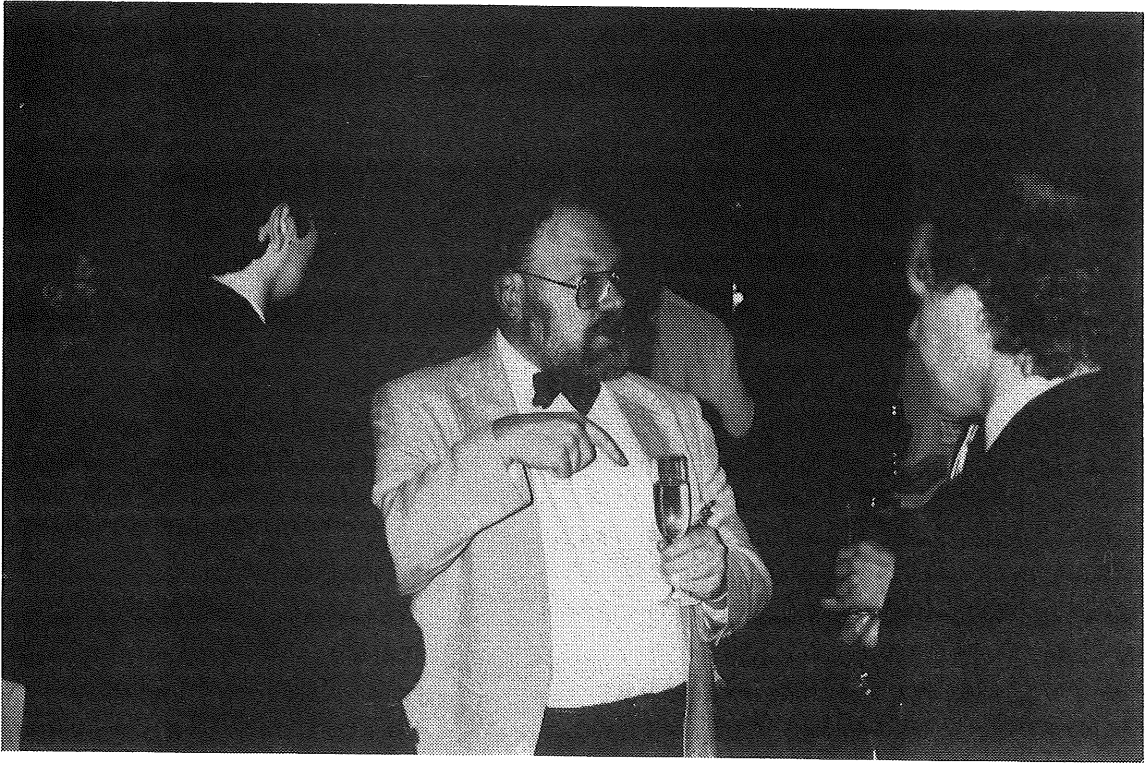


Who took this photo?

How embarrassing-
I don't ever remember
taking this photo!

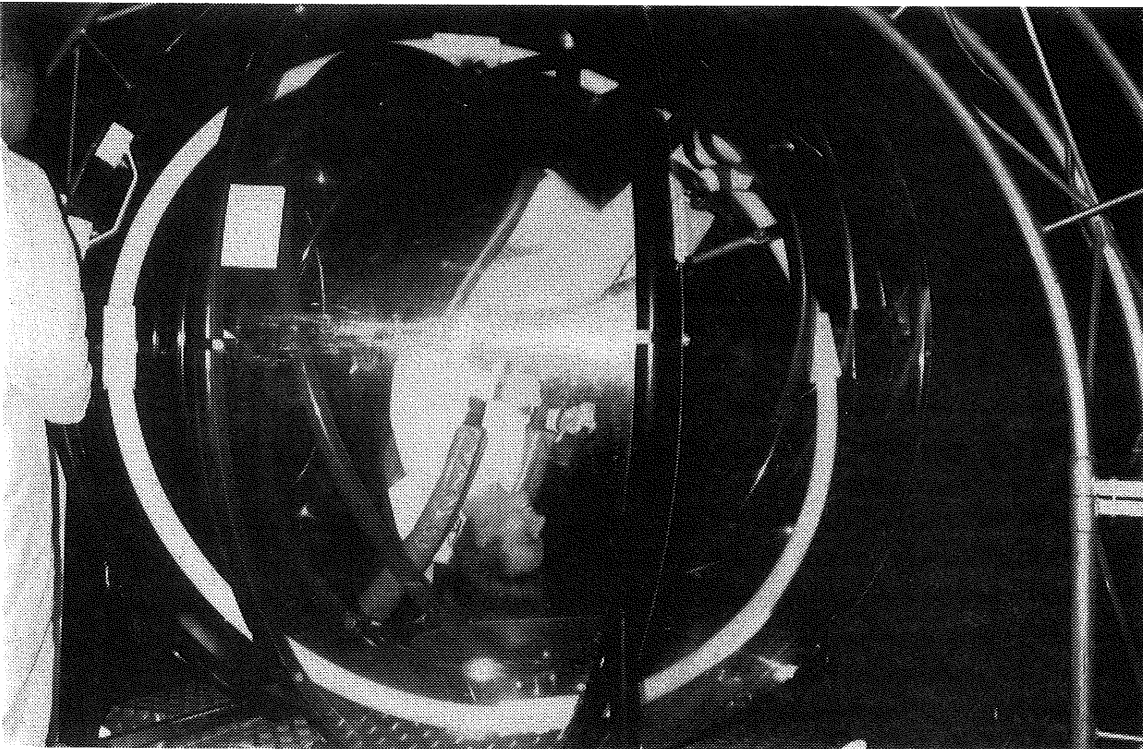


Gene Spafford
"You mean there was
a WORM in this???"





Brenda Lobb
(Uniformun NZ)
& Bob Glass (Sun)



Linus Torvalds joining
the *wheel* group
at last.

Call for Articles for the Australian

The Australian newspaper runs an AUUG column every Tuesday, in its computer section. The aim of these articles is to inform the public and raise the profile of open systems within this country. Having one's views published in a respected national paper also carries kudos and recognition for authors.

AUUG would like to ensure that all members of the open system community have access to this voice, and we are actively seeking a diverse spectrum of people and opinions.

If you are interested in being part of this process, please provide me with the following information:

- * your name
- * contact details
- * a copy of your article

Your article should be between 600 and 800 words in length, and can address any issue that may be of interest within the open systems community. If you can't decide on an appropriate topic, please provide me with some professional details and I'll try and give you some ideas tailored to your expertise. Some typical subjects are listed at the end of this article.

If you have access to email, this is the preferred form of submission. Please format your article as a plain text file, with lines no longer than 79 characters, and with a blank line separating paragraphs. If you don't have email, please provide a hardcopy in a similar format (there's not much point doing any fancy typesetting).

All submissions are accepted on the understanding that they may or may not be used and that the material may be edited. AUUG will only submit your work to the Australian newspaper, although unless you advise us otherwise we will reserve the right to add your articles to a public FTP archive at some time in the future, and reprint them in AUUG's newsletter, AUUGN. The copyright on the material remains yours, your act of submitting material only gives us licence for the abovementioned purposes.

In practice, I submit your work to the Australian unedited and leave the decision of what to print up to them (I'm not in the business of being a thought police!). Usually a period of 2 to 4 weeks will then pass before you'll see your article in print; I maintain a pipeline of material to buffer me against the inevitable fluctuations in supply.

Please email or phone me if you have any further queries.

Lucy Chubb
lucyc@sw.oz.au
(02) 698 2322

NOTE: Lucy has taken over this role from Michael Paddon.

Some topical areas to get you started :-

Standards: POSIX, X/Open, System V.

The sudden demise of COSE;

just another consortium?

The history of Unix.

The future of Unix.

If NT is so popular,

how come no one is using it?

Competition for the desktop:

Unix, Windows/NT and OS/2.

Managing security.

Computer viruses.

System administration.

Network administration.

Networking technologies.

Distributed computing.

What happened to OSI?

Managing multiple network protocols.

Living with the Internet.

Unix on PC's.

Linux - the people's Unix?

Would you run Unix at home?

The graphics revolution.

Virtual reality.

CASE tools.

Is Unix really that hard to use?

Now that Unix has grown up,

where have the hackers gone?

The costs of open systems.

Analyse a market trend.

Run a straw poll on a topical subject.

New technologies.

New AUUGN Editor Wanted

After over three years of editing AUUGN, I find that due to work commitments I am forced to give up this rewarding task. As such AUUG is looking for a new editor.

The tasks include: the gathering of information from the AUUG Committee, Local Chapters, the Business Manager, the Secretariat and members, and liaising with the printer (currently in Sydney), advertisers and Australia Post.

The final product is a newsletter published bi-monthly of about 100 pages, which contains information both relevant to the membership and articles of a reasonable technical nature.

Most communication is via electronic mail, with a large number of the articles also being submitted this way.

You need to have an interest in newsletter publications, access to e_mail, knowledge of and access to various document processing packages on UNIX and PCs, and access to good quality printing facilities.

It is my intention to hand over to the new editor in early 1995, with a reasonable hand over time after that.

If you are interested in taking over the editing of AUUGN please contact me either via e_mail or phone me on (02) 717 3885.

Jagoda Crawford
auugn@munnari.oz.au

Open System Publications

As a service to members, AUUG will source Open System Publications from around the world. This includes various proceeding and other publications from such organisations as

AUUG, UniForum, USENIX, EurOpen, Sinix, *etc.*

For example:

EurOpen Proceedings		USENIX Proceedings	
Dublin	Autumn'83	C++ Conference	Apr'91
Munich	Spring'90	UNIX and Supercomputers Workshop	Sept'88
Trosno	Spring'90	Graphics Workshop IV	Oct'87

AUUG will provide these publications at cost (including freight), but with no handling charge. Delivery times will depend on method of freight which is at the discretion of AUUG and will be based on both freight times and cost.

To take advantage of this offer send, in writing, to the AUUG Secretariat, a list of the publications, making sure that you specify the organisation, an indication of the priority and the delivery address as well as the billing address (if different).

AUUG Inc.
Open System Publication Order
PO Box 366
Kensington, NSW, 2033
AUSTRALIA
(02) 332 4066

Fax:

ANNOUNCEMENT & CALL FOR PARTICIPATION

9th USENIX SYSTEMS ADMINISTRATION CONFERENCE (LISA IX)

September 18-22, 1995

Marriott Hotel, Monterey, California

Co-sponsored by

USENIX, the UNIX and Advanced Computing Systems Professional and Technical Association, and
SAGE, the System Administrators Guild

IMPORTANT DATES

Refereed paper submissions:

Extended abstracts due: May 1, 1995

Notification to authors: June 5, 1995

Final papers due: August 1, 1995

Registration materials available: July, 1995

The USENIX Systems Administration (LISA) Conference is widely recognized as the leading technical conference for system administrators. Historically, LISA stood for "Large Installation Systems Administration," back in the days when having a large installation meant having over 100 users, over 100 systems, or over one gigabyte of disk storage. Today, the scope of the LISA conference includes topics of interest to system administrators from sites of all sizes and kinds. What the conference attendees have in common is an interest in solving problems that cannot be dealt with simply by scaling up well-understood solutions appropriate to a single machine or a small number of workstations on a LAN.

The theme for this year's conference is "New Challenges," which includes such emerging issues as integration of non-UNIX and proprietary systems and networking technologies, distributed information services, network voice and video teleconferencing, and managing very complex networks. We are particularly interested in technical papers that reflect hands-on experience, describe fully implemented and freely distributable solutions, and advance the state of the art of system administration as an engineering discipline.

TUTORIAL PROGRAM

Monday and Tuesday, September 18-19, 1995

The two-day tutorial program at the conference offers up to five tracks of full- and half-day tutorials. Tutorials offer expert instruction in areas of interest to system administrators of all levels, from novice through senior. Topics are expected to include networking, advanced system administration tools, Solaris and BSD administration, Perl programming, firewalls, NIS, DNS, Sendmail, and more.

To provide the best possible tutorial offerings, USENIX continually solicits proposals for new tutorials. If you are interested in presenting a tutorial at this or other USENIX conferences, please contact the tutorial coordinator:

Daniel V. Klein
+1 412 421 0285
FAX: +1 412 421 2332
E-mail: dvk@usenix.org

TECHNICAL SESSIONS

Wednesday through Friday, September 20-22, 1995

The three days of technical sessions consist of two parallel tracks. The first track is dedicated to presentations of refereed technical papers. The second track is intended to accommodate invited talks, panels and Works-in-Progress (WIP) sessions.

CONFERENCE TOPICS

Papers addressing the following topics are particularly timely; papers addressing other technical areas of general interest are equally welcome.

- Dealing with differences in UNIX implementations -- migration and interoperability among BSD, SVR4, OSF and others
- Integration of UNIX-based with non-UNIX-based and proprietary systems and networking technologies (Mac, NT and DOS PCs)
- Application of emerging technologies (Mbone, Mosaic) to system administration
- Administration and security of distributed information services (WAIS, gopher, WWW) and network voice and video conferencing (Mbone)
- Experience supporting mobile and location-independent computing
- Experience with large (1000+ machine) networks, especially networks of SVR4-based systems
- Real-world experience with implementations of proposed system administration standards
- Unusual applications of commercial system administration software packages
- Application of operational planning techniques to system administration including measurements and metrics, continuous process improvement, automation, and increasing productivity
- File migration, archival storage and backup systems in extremely large environments
- Innovative tools and techniques that have worked for you
- Managing high-demand and high-availability environments
- Migrating to new hardware and software technologies
- Administration of remote sites that have no technical experts
- Supporting MIS organizations on UNIX
- Real-world experiences with emerging procedural/ethical issues--e.g., developing site policies, tracking abusers, and implementing solutions to security problems
- Networking non-traditional sites (libraries, museums, K-12)

REFEREED PAPER SUBMISSIONS

An extended abstract is required for the paper selection process. Full papers are not acceptable at this stage; if you send a full paper, you must also include an extended abstract. "Extended" means 2-5 pages.

Include references to establish that you are familiar with related work, and, where possible, provide detailed performance data to establish that you have a working implementation or measurement tool.

Submissions will be judged on the quality of the written submission, and whether or not the work advances the state of the art of system administration. For more detailed author instructions and a sample extended abstract, send email to lisa9authors@usenix.org, or call USENIX at +1 510 528 8649.

Note that the USENIX organization, like most conferences and journals, requires that papers not be submitted simultaneously to more than one conference or publication and that submitted papers not be previously or subsequently published elsewhere. Papers accompanied by "non-disclosure agreement" forms are not acceptable and will be returned unread. All submissions are held in the highest confidence prior to publication in the conference proceedings, both as a matter of policy and as protected by the U.S. Copyright Act of 1976.

Authors of an accepted paper must provide a final paper for publication in the conference proceedings. At least one author of each accepted paper presents the paper at the conference. Final papers are limited to 20 pages, including diagrams, figures and appendixes, and must be in troff, ASCII, or LaTeX format. We will supply you with instructions. Papers should include a brief description of the site, where appropriate.

Conference proceedings, containing all refereed papers and materials from the invited talks, will be distributed to attendees and will also be available from the USENIX following the conference.

WHERE TO SEND SUBMISSIONS

Please submit extended abstracts for the refereed paper track by TWO of the following methods:

% E-mail to: lisa9papers@usenix.org

% FAX to: +1 510 548 5738

% Mail to:

LISA 9 Conference
USENIX Association
2560 Ninth Street, Suite 215,
Berkeley, CA USA 94710

To discuss potential submissions, and for inquiries regarding the content of the conference program, contact the program co- chairs at lisa9chair@usenix.org or at:

Tina M. Darmohray
Lawrence Livermore National Laboratory
PO Box 808 L-510
Livermore, CA USA 94550
+1 510 423 5999
FAX: +1 510 422 7869
E-mail: tmd@usenix.org

Paul Evans
Synopsis, Inc.
700 East Middlefield Road
Mountain View, CA USA 94043
+1 415 694 1855
FAX: +1 415 965 8637
E-mail: ple@usenix.org

INVITED TALK TRACK

If you have a topic of general interest to system administrators, but that is not suited for a traditional technical paper submission, please submit a proposal for a second track presentation to the invited talk (IT) coordinators:

Laura de Leon, Hewlett-Packard
+1 415 857 5605
FAX: +1 415 857 5686
E-mail: deleon@hpl.hp.com

Peg Schafer, BBN
+1 617 873-2626
FAX: +1 617 873 4265
E-mail: peg@.com

PROGRAM COMMITTEE

Program Co-chair: Tina Darmohray, Lawrence Livermore National Laboratory
Program Co-chair: Paul Evans, Synopsis, Inc.
Paul Anderson, University of Edinburgh
Kim Carney, Massachusetts Institute of Technology
Rob Kolstad, Berkeley Software Design, Inc.
Bryan McDonald, SRI International
Marcus Ranum, Trusted Information Systems, Inc.

John Schimmel, Silicon Graphics, Inc.

VENDOR DISPLAY

Wednesday, September 20, 1995

Well-informed vendor representatives will demonstrate products and services at the informal table-top display. If your company would like to participate, please contact:

Zanna Knight
+1 510 528 8649
FAX: +1 510 548 5738
E-mail: display@usenix.org

BIRDS-OF-A-FEATHER SESSIONS

Birds-of-a-Feather sessions (BoFs) are very informal gatherings of attendees interested in a particular topic. BoFs are held Tuesday, Wednesday, and Thursday evenings of the conference. BoFs may be scheduled in advance by telephoning the USENIX Conference Office at +1 714 588 8649 or via e-mail to conference@usenix.org. They may also be scheduled at the conference.

FOR REGISTRATION INFORMATION

All details of the conference program, conference registration fees and forms, and hotel discount and reservation information will be available in July, 1995. If you wish to receive registration materials, please contact:

USENIX Conference Office
22672 Lambert Street, Suite 613
Lake Forest, CA USA 92630
+1 714 588 8649
FAX: +1 714 588 9706
E-mail: conference@usenix.org

ANNOUNCEMENT and PRELIMINARY CALL FOR PAPERS

5th USENIX UNIX Security Symposium

June 5-7, 1995

Salt Lake City Marriott Hotel

Salt Lake City, Utah

Sponsored by
the USENIX Association, the UNIX and Advanced Computing Systems Professional and Technical Association

In cooperation with:
The Computer Emergency Response Team (CERT), IFIP WG 11.4, and Uniform (pending)

IMPORTANT DATES

DATES FOR REFEREED PAPER SUBMISSIONS

Extended abstracts due: Feb 13, 1995
Program Committee decisions made: Mar 8, 1995
Camera-ready final papers due: May 1, 1995

Registration Materials Available: March 1995

PROGRAM COMMITTEE

Program Chair: Fred Avolio, Trusted Information Systems, Inc.

Steve Bellovin, AT&T Bell Laboratories
Bill Cheswick, AT&T Bell Laboratories
Ed DeHart, CERT
Ed Gould, Digital Equipment Corporation
Marcus Ranum, Trusted Information Systems, Inc.
Jeff Schiller, MIT
Gene Spafford, COAST Laboratory, Purdue University

OVERVIEW

The goal of this symposium is to bring together security practitioners, researchers, system administrators, systems programmers, and others with an interest in computer security as it relates to networks and the UNIX operating system.

This will be a 3 day, single-track symposium. The symposium will consist of tutorials, refereed and invited technical presentations, and panel sessions. The first day will be devoted to tutorial presentations. Two days of technical sessions will follow the tutorials.

TUTORIALS

[June 5]

This one-day tutorial program is designed to address the needs of both technical and management attendees. The tutorials will supply overviews of various security mechanisms and policies. Each will provide specifics to the system and site administrator for implementing numerous local and network security precautions, firewalls, and monitoring systems.

KEYNOTE AND TECHNICAL SESSIONS

[June 6-7]

The keynote address by Stephen T. Walker, Founder and President of Trusted Information Systems, will

begin the technical sessions program. Mr. Walker will speak on information security and privacy in computing. Mr. Walker is an electronics engineer and computer systems analyst with over 25 years of experience in system design and program management; particularly extensive is his experience with the design and implementation of large scale computer networks and information systems. He is recognized for his pioneering work on the DoD Computer Security Initiative, the establishment of the National Computer Security Center, and the formation of the Defense Data Network. He is a member of the Computer System Security and Privacy Advisory Board, established by the Computer Security Act of 1987.

The technical sessions program, in addition to presentations of refereed papers, will include invited talks, and possibly panel sessions. There will also be two evenings available for Birds-of-a-Feather sessions (BoFs) and Works-in-Progress Reports (WiPs). The program committee invites you to submit proposals, ideas, or suggestions for these presentations; your suggestions may be submitted to the program chair via email to: security@usenix.org or by post to the address given below.

Papers that have been formally reviewed and accepted will be presented during the symposium and published in the symposium proceedings. Proceedings of the symposium will be published by USENIX and will be provided free to technical session attendees; additional copies will be available for purchase from USENIX.

SYMPOSIUM TOPICS

Presentations are being solicited in areas including but not limited to:

- User/system authentication
- File system security
- Network security
- Security and system management
- Security-enhanced versions of the UNIX operating system
- Security tools
- security incident investigation and response
- computer misuse and anomaly detection
- security in heterogeneous environments
- configuration management to support security
- security-related testing methods
- case studies

REFEREED PAPER SUBMISSIONS

Submissions must be received by Feb 13, 1995. Full papers should be 10 to 15 pages. Instead of a full paper, authors may submit an extended abstract which discusses key ideas. Extended abstracts should be 5-7 pages long (about 2500-3500 words), not counting references and figures. The body of the extended abstract should be in complete paragraphs. The object of an extended abstract is to convince the reviewers that a good paper and presentation will result.

All submissions will be judged on originality, relevance, and correctness. Each accepted submission will be assigned a member of the program committee to act as its shepherd through the preparation of the final paper. The assigned member will act as a conduit for feedback from the committee to the authors. Camera-ready final papers are due May 1, 1995.

Please accompany each submission by a cover letter stating the paper title and authors along with the name of the person who will act as the contact to the program committee. Please include a surface mail address, daytime and evening phone number, and, if available, an email address and fax number for the

contact person.

If you would like to receive detailed guidelines for submission and examples of extended abstracts, you may send email to:

securityauthors@usenix.org

or telephone the USENIX Association office at +1 510 528 8649.

The UNIX Security Symposium, like most conferences and journals, requires that papers not be submitted simultaneously to another conference or publication and that submitted papers not be previously or subsequently published elsewhere. Papers accompanied by "non-disclosure agreement" forms are not acceptable and will be returned to the author(s) unread. All submissions are held in the highest confidentiality prior to publication in the Proceedings, both as a matter of policy and in accord with the U.S. Copyright Act of 1976.

WHERE TO SUBMIT

Please send one copy of a full paper or an extended abstract to the program committee via two of the following methods. All submissions will be acknowledged.

- Preferred Method: email (Postscript or ASCII) to:
securitypapers@usenix.org
- Alternate Methods:
- Postal delivery to:
Fred Avolio
Trusted Information Systems
3060 Washington Road
Glenwood, MD 21738
Phone: +1 301 854 6889
- Fax to: +1 301 854 5363

REGISTRATION MATERIALS

Materials containing all details of the technical and tutorial programs, registration fees and forms, and hotel information will be available beginning in March 1995. If you wish to receive the registration materials, please contact USENIX at:

USENIX Conference Office
22672 Lambert Street, Suite 613
Lake Forest, CA USA 92630
+1 714 588 8649; Fax: +1 714 588 9706
email: conference@usenix.org

AUUG Regional Contacts

1994 - 1995

Location	Contact	Tel/Fax
Adelaide	Michael Wagner mhw@syserv.com.au	Tel: (08) 212-2800 Fax: (08) 231-0321
Brisbane	David Hughes bambi@Bond.edu.au	Tel: (075) 95-1450 Fax: (075) 95-1456
Canberra	John Barlow john.barlow@anu.edu.au	Tel: (06) 249-2930 Fax: (06) 249-0747
Darwin	Phil Maker pjm@cs.ntu.edu.au	Tel: (089) 466-666 Fax: (089) 270-612
Hobart	Steven Bittinger steven.bittinger@its.utas.edu.au	Tel: (002) 207-406 Fax: (002) 207-488
Melbourne	David Taylor davet@vaxc.cc.monash.edu.au	Tel: (03) 857-5660
Perth	Adrian Booth abcc@dialix.oz.au	Tel: (09) 354-4936 Fax: (09) 354-4936
Sydney	Julian Dryden julian@dwt.csiro.au	Tel: (02) 809-9345 Fax: (02) 809-9476

6th Annual Canberra Conference and Workshops

Call For Presentations and Workshops

AUUG in Canberra is holding its 6th annual conference and workshops probably in mid-February 1995. As well as a selection of international and national speakers, we are looking for presentations from local individuals and organisations in any area of UNIX or Open Systems. Presenters for half or full day workshops on any subject are also welcome (workshop presenters receive a modest stipend).

The 1994 conference and workshops were attended by over 100 people from throughout the Canberra region. We look forward to seeing you at the 1995 conference and workshops.

Secretary, Canberra Chapter of AUUG Inc.: Mr John Barlow,
ANU, Parallel Computing Research Facility,
2492750 (work) 2490747 (fax)
John.Barlow@anu.edu.au (email).

Softway
Excellence in System Software

Moving to OPEN Systems?

Softway is Australia's largest open systems software house.

We understand the needs of the open systems marketplace, and have extensive expertise in the following areas:

- Client/Server architectures**
- TCP/IP based networks**
- Security auditing**
- Internet connections, firewalls**
- Network integration**
- Benchmarking and performance tuning**
- Software Quality Assurance**
- UNIX Training**
- Contract software development**

79 Myrtle Street
Chippendale
NSW 2008

Phone: (02) 698 2322
Fax: (02) 699 9174
Internet: enquiries@sw.oz.au

CALL FOR PAPERS FOR NSW CHAPTER OF AUUG SUMMER TECHNICAL CONFERENCE

Wednesday, March 1st - Friday March 3rd, 1995

The NSW Chapter of AUUG 1995 Summer Technical Conference will tentatively be held on March 1-3, 1995.

Speakers and workshop/tutorial presenters are invited to speak on issues related to UNIX and Open systems, including, but not limited to system and network administration, software engineering, operating system research, works in progress and implementation on any combination of Open systems including Plan 9, NT, Novell, Banyan Vines etc.

Prospective speakers and workshop/tutorial presenters are invited to submit abstracts to the NSW conference organiser, Brenda Parsons, whose contact details appear below. Please indicate the length of the time slot required for your talk in increments of 15 minutes.

Selected non-Sydney-siders (>100 kms) speakers and tutorial presenters will have their travel and accommodation subsidised by the NSW Chapter of AUUG,

All such speakers and tutorial presenters will also receive complimentary conference registration.

Speakers and Tutorial/Workshop Presenters at Summer Conferences around Australia may be invited by AUUG Inc. to deliver their paper or workshop at the AUUG 1995 Winter Conference in Sydney.

Speakers should NOTE that the provision of a full paper and/or a set of slides for inclusion in the proceedings will be MANDATORY this year. Papers will be accepted in most electronic formats, but must be camera ready if not in electronic format.

Prospective workshop/tutorial presenters are to submit an outline and an indication as to the duration of the workshop/tutorial (half day increments) to the conference organiser.

A non-exhaustive list of possible Tutorial/Workshop Topics Include (some of these could also be papers):

- * Perl and/or tkperl
- * Tcl/Tk
- * Sh/ksh programming for the masses
- * Introduction to UNIX
- * Introduction to Sys Admin
- * Configuration Management / Source Control Schemes
- * Firewall Workshop
- * Network Management Workshop / SNMP
- * The Information Superhighway
- * Welcome to the M-Bone
- * Introduction to Networks
- * Sendmail Configuration
- * Internet News Management (B/C News, nntp etc)

- * Public Domain software that every site can't live without - getting, maintaining, ftp, patch etc.
- * Headaches of a Hetrogeneous environment - coping with the macs, pc's, nt's, novell's etc.
- * Why Novell 4.0 looks more like unix then it does Netware 3.11?
- * Cisco Router configuration and access lists.
- * Performance Tuning for OS's and Databases

IMPORTANT DATES:

Closing date for abstracts:	November 19, 1994
Speaker Notifications:	December 3, 1994
Tutorial/Workshop Notes due:	February 1, 1995
Finished papers due:	February 1, 1995
Early Bird Registration:	February 15, 1995
Conference date:	March 1-3, 1995

Abstracts and tutorial/workshop outlines may be either emailed or Australia posted in any suitable format to:

Post: Brenda Parsons
Osmosys Consulting
PO Box 43
Darlinghurst 2010

Email: bdp@sydney.dialix.oz.au

Phone: 018 647 259

Brenda Parsons.

AUUG Inc. - Victorian Chapter

(formerly SESSPOOLE)

AUUG-Vic is the official Victorian chapter of AUUG Inc. It was the first Chapter of the AUUG to be formed, then known as SESSPOOLE, and its members have been involved in the staging of the Victorian AUUG Summer Technical Meetings every year since 1990. AUUG-Vic currently meets approximately every six weeks to hold alternate social and technical meetings. It is open to all members of AUUG Inc., and visitors who are interested in promoting further knowledge and understanding of UNIX and Open Systems within Victoria.

The purpose of the social meetings is to discuss UNIX and open systems, drinking wines and ales (or fruit juices if alcohol is not their thing), and generally relaxing and socialising over dinner. Whilst the technical meetings provide one or two "stand-up" talks relating to technical or commercial issues, or works in progress of open systems.

The programme committee invites interested parties wishing to present their work, to submit informal proposals, ideas, or suggestions on any topics relating to Open Systems. We are interested in talks from both the commercial and research communities.

Social meetings are currently held in the Bistro of *The Grosvenor Tavern, 2A Equitable Place, Melbourne.*, starting at about 6:30pm. Venues for the technical meetings are varied and are announced prior to the event. The dates for the next few meetings are:

Wed, 9 November '94	Technical
Tue, 20 December '94	Social
Wed, 1 February '95	Technical
Tue, 14 March '95	Social
Wed, 19 April '95	Technical

Hope to see you there!

To find out more about AUUG-Vic and its activities, contact the committee or look for announcements in the newsgroup **aus.org.auug**, or on the mailing list **auugvic@clcs.com.au**. The committee may be reached more directly on **auugvic-exec@clcs.co.au**.

AUUG-Vic committee:

President:	Enno Davids	Metva	(03) 882 2333	enno@metva.technix.oz.au
Secretary:	David Taylor	Monash University	(03) 857 5660	davet@vaxc.cc.monash.edu.au
Treasurer:	Neil Murray	Webster Computer	(03) 561 9999	neil@wcc.oz.au
Programme Chair	Michael Paddon	Kodak	(03) 353 2382	mwp@munnari.oz.au
Committee:	Arnold Pears	La Trobe University	(03) 479 1144	pears@latcs1.lat.oz.au
Committee:	Peter Lazarus	Legent Australia	(03) 286 5200	plazarus@auspacific.legent.com

AUUG-Vic Email addresses:

General Membership	auugvic@clcs.com.au
Committee:	auugvic-exec@clcs.com.au
Mailing list administration:	auugvic-request@clcs.com.au

AUUG-Vic chapter activities

by **Enno Davids**

President AUUG-Vic

enno@metva.technix.oz.au

October has just begun as I write this column. For a change, I even have some news to report. Despite hectic schedules we are slowly managing to achieve some results.

Meeting venue

At long last we may have found a new venue. As we have discussed for some time, we wished to move our meeting venue closer to the centre of Melbourne than the previous choice in South Oakleigh. With this in mind we tried out a new place to meet in the CBD.

The venue was the Bistro of:

The Grosvenor Tavern
2A Equitable Place
Melbourne, 3000
Phone: 670 7952

The turnout was reasonable and most present seemed happy with the new arrangement. The only real problem we could see was that of parking, which is not a big surprise for the city. This can mostly be ameliorated by perhaps starting the meeting at seven to allow some of the cars drain out to the suburbs.

The management came to the party and laid on some free food which was well received. All things being equal it is our intention to try at least the next social evening there and see how those present feel at that time. For now, the drinks are reasonably priced, there is NO band, and the ambience (don't you hate that word?) was cool.

Getting There

As we intend to meet there again and not all the member will have seen the announcement on the mailing list or newsgroup, I will reprint the instructions I gave for finding the place. Equitable Place is a lane which runs from Collins St. to Little Collins. At the Collins St. end it emerges next the the Colonial building and stretches through to where the (formerly) State Bank Galleria exits at Little Collins St. 2A is closer to the State Bank end

of the lane and the Grosvenor Tavern is down a flight of stairs. The Bistro, where we expect to meet, is to the left at the bottom of the stairs while the public bar is to the right.

The Lure

By way of encouragement to attend we attempted to run a little competition. The prize was to be a suitable bottle of wine and to win all you had to do was come up with a good collective noun for quality control documentation (i.e. ISO 9000 documents, AS390x documents, AS3563 documents, etc.). For example, "Some one has just dropped a landfill of ISO 9000 documents on my desk". Hardened drinkers that we are we forgot to deal with the prize giving. This may also be a reflection on the quality and nature of the entries. So next time we'll be giving away two bottles of something drinkable for whatever new lure we can come up with.

Internet access & Discounts

Of recent times the opportunities for us to resolve something here have expanded considerably. The feeling of the meeting was that we should re-investigate our options and finalize this soon. The committee wants to get this and the question of discounts finished before the end of the year and leave the incoming committee with a clean slate to start from. Suggestions, pointers and/or offers in either of these areas are as always welcome.

Summer conference

The Summer conference is rushing towards us and as I write this we are wrestling with finding a program chair. Hopefully, by the time you read this we will have found a suitable volunteer and he or she will have issued a call for papers. If you have done anything interesting at work and you feel up to putting together a short spiel about it then you should seriously consider this as an opportunity to practice your speaking skills. It is worth pointing out here that almost all of you will be doing something of interest to your peers and its really just a matter of choosing an appropriately sized chunk of it to speak on and massaging it into a short paper and set of overheads. If you want assistance, or need guide-

lines or pointers, I am sure we can arrange suitable volunteers. Drop us a line either way.

Technical meeting organizer

This all leads on to our current meeting organizer/chair of the technical evenings. These are the evenings which we alternate with our social meetings. Ever since the program of technical evenings was introduced Michael Paddon has served in this role. Having recently changed employers and taken on more responsibility at work Mike now feels he no longer has the time to devote to getting these evenings organized. As such he has signalled his intention to stand down at the next AUUG-Vic AGM. Firstly, I would like to extend both my thanks to Michael and my heartfelt congratulations on the standard he has maintained for these meetings. The advance warning Michael has given us also allows me to flag the soon to be vacant position with you the members and invite anyone who may feel an interest at having a go at this job to consider it. We have until the AGM at the start of 1995 to find a candidate.

PTF CDROMs

Some of you will be aware of the Prime Time Free-ware CDROMs which are available. For those of you who aren't aware of them, these CDROMs are collections of software from the net and from the various archives around the world. Two CDROMs with compressed archive files make up about 2Gb of assorted software ranging from the indispensable to the esoteric. One of our members, Rodney Brown, on finding himself with an excess of these CDROMs and feeling that having more than one copy was of limited appeal has donated his two spare copies to AUUG-Vic and to any of the other chapters as we see fit. This means we have these CDROMs available for any of the membership who want to have a browse. Drop me or the committee a line if you want to make use of this offer and we can make arrangements. In the meantime, I would like to thank Rodney for this gesture as it certainly came out of the blue for me and I was gratified to see this level of support coming from the membership for the group. Nice one.

Aptitude tests

I can't resist. This last week at work, I saw a jaw dropper. The project manager at work has been on a bit of a hiring spree lately and as part of the process of separating the wheat from the chaff has been administering a 'C' aptitude test. Before those University exam nightmares come back to haunt you

though I should add that the test in question is, well, fairly basic. In fact, it gives a prototype for a function which we, for arguments sake (no pun intended), will call `strcpy` and allows the candidate 5 minutes to implement it. No restriction was made about using the standard library. So, the amazing thing for me was the number of candidates who fail this test. The record currently stands at the gentleman who after 5 minutes of think muzak had come up with the following one liner.

```
{
```

And no that is not a misprint. We have people out there applying for 'C' programmer positions (in an embedded systems environment what's more) who can't get past a single opening brace. I have not yet decided whether this is job security or a sign that I should get out before I get tarred with the same brush.

Well, that's about all for the moment. Remember, if you have something to say or a question to ask you can drop us a line at any time either electronically or via OzPost or even just come along and corner one of the committee at one of the social or technical evenings or one of the other AUUG events.

Ciao for now,

Enno.

ANNOUNCEMENT AND CALL FOR PAPERS
PERTH SUMMER TECHNICAL CONFERENCE

Wednesday, February 22, 1995 †

The Perth AUUG 1995 Summer Technical Conference will be held on February 22, 1995†. Speakers are invited to speak on technical issues related to Unix and Unix-like systems, including but not limited to system and network administration, software engineering, and operating system research and implementation.

Prospective speakers are invited to submit abstracts to the Perth conference organiser, Adrian Booth, whose contact details appear below. Selected interstate speakers will have their travel and accommodation paid for by AUUG Inc. All speakers will receive complimentary conference registration.

Speakers at Summer Conferences around Australia may be invited by AUUG Inc. to deliver their paper at the AUUG 1995 Winter Conference in Sydney.

Speakers should *note* that the provision of a full paper and/or a set of slides for inclusion in the proceedings will be **mandatory** this year. If this is inappropriate for your talk, please contact the organiser.

It is currently planned to host a series of workshops and/or tutorials on one or more days around the conference date. Prospective workshop/tutorial presenters are also sought, and are invited to submit a brief overview and an estimate of the duration of the workshop/tutorial to the conference organiser.

IMPORTANT DATES:

Closing date for abstracts:	December 15, 1994
Finished papers due:	February 1, 1995
Conference date:	February 22, 1995 †

Adrian Booth
abcc@perth.dialix.oz.au
Arena Technology
7 Glenrowan Place
Willetton WA 6155 Oz
Phone (09) 354 4936
Fax (09) 354 4115

† The conference date is tentative depending upon the availability of our interstate speaker, however it should be in the last two weeks of February, 1995.

From the Western Front

September has been quite a month for me personally and for AUUG in general.

At the beginning of the month a record number (21) from WA travelled to Melbourne and enjoyed the winter conference and exhibition. "Enjoyed" certainly seems to be the right word for this year's conference: the only part I didn't enjoy was the slight hangover on the Friday morning after the dinner.

There were a particularly fine bunch of international speakers at AUUG'94. Gene Spafford, Tom Christiansen, Dennis Ritchie and Linus Torvalds come immediately to mind. Linus came to Perth last week to present a version of his talk on Linux as well as a hastily-arranged tutorial. 150 people heard the talk: about three times the usual size of the Perth summer conferences! About 20 attended the tutorial despite having only two days' notice. Well done to Adrian Booth for organising it all.

The WA chapter of SAGE-AU (the Systems Administrators Guild of Australia) finally managed to have its second meeting, other than the annual conference, a couple of days ago. I didn't take a count, but I think about 15 turned up, out of 40 members. Alan Main from Functional Software gave a very interesting talk on developing a policies and procedures manual for systems administration. A lively audience discussion ensued, with many pitfalls and benefits being pointed out and experiences related.

We then chatted over tea, coffee and biscuits. I had organised the meeting and imagined I'd done everything perfectly until, standing by the urn, I suddenly remembered the milk! I couldn't go get it, for reasons that will shortly become clear, but Tony Hoar saved the day by nipping over to his department (the meeting was held at the University of WA) and raiding their fridge.

I'd left the milk, carefully marked "SAGE-AU Only", in the locked building of the Centre for Water Research, a few minutes' walk from the meeting. This would not normally have been a problem, except that only an hour before I had handed in my keys and left the building for the last time. (For those who don't already know, I've given up working for the man to become a freelance consultant.)

I guess leaving a job and organising a meeting on the same day is asking for trouble.

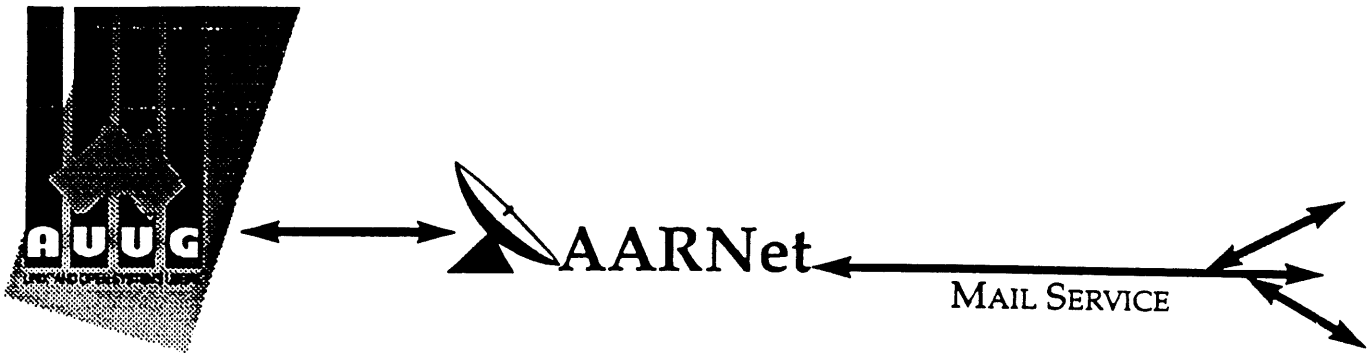
-o0o-

WAUG needs people to review or summarise its meetings for the benefit of those who can't get there. Write-ups will also encourage speakers (the good ones, at least). No-one has reviewed the August meeting, at which Tim McGrath from TEDIS gave a talk on electronic messaging and EDI. I seem to recall finding this talk surprisingly interesting — EDI is not something that increases my heart rate.

So if you can do the occasional meeting writeup, please let me know. If flowing prose is not your thing, how about doing a point-form summary?

WAUG meetings are held on the 3rd Tuesday of the month, normally at the Blue Note Tavern, Colin Street, West Perth. The organiser is Mark Baker, <waug-meetings@uniwa.uwa.edu.au>, (09) 491 6081.

Janet Jackson <janet@dialix.oz.au> (WA Chapter Sub-editor), (09) 272 5061
From WAUG, the WA Chapter of AUUG



Dear Site Administrator,

As you may be aware, the arrangements for mailing to addresses outside Australia (and also to AARNet sites) changed in May 1991. Since then, the University of Melbourne are no longer managing the administrative details associated with maintaining this service. The AARNet (Australian Academic and Research Network) management has taken over administering the service, and are requiring all ACSnet and similar sites to register with AARNet and pay a fee for continued access to Internet mail services. AARNet have set this fee as \$1000 per annum for most sites, with larger sites paying more (you know who you are).

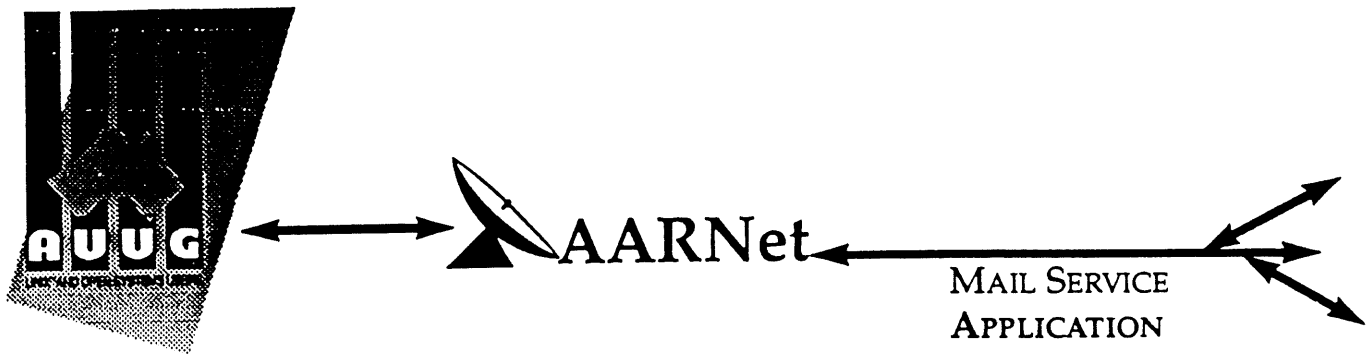
The fee is intended to cover use of AARNet bandwidth for your network traffic. Registration with AARNet, however, provides ONLY the registration of your address in worldwide address tables - your site will be unreachable without this registration. The fee does NOT cover the costs involved in obtaining a connection to AARNet or ACSnet NOR does it include a guarantee that you can be connected or even to help you find a connection point. See Note B for some information about connection services.

AUUG as a service to its members has negotiated with AARNet to achieve a lower price for this basic address registration service. The lower price is based on the reduction in paperwork for the AARNet management authorities. The AUUG/AARNet fee is dependent on the membership status of the owner of the machine(s)/domain involved, and is currently \$250 for members and \$600 for non-members. As such it is a substantial discount on the AARNet fee, but only applies to sites in the AARNet \$1000 category. Larger sites will need to negotiate directly with AARNet.

The address registration is for one AUUG membership year. Membership years start on the 1st January or July, whichever is nearest to receipt of your application. Sites which do not renew their AUUG/AARNet registration annually with their AUUG membership each year will be removed from the Internet tables and will no longer be able to communicate with international and AARNet hosts. Reminders/invoices will be sent along with your membership renewal.

The required initial registration form is attached below. It should be completed and forwarded to AUUG's (postal) mailing address at the bottom of the form or faxed to (02) 332 4066. If you have any queries on the AUUG/AARNet arrangements please direct them to Catrina Dwyer at the AUUG office on (02) 959 3656 (catrina@swift.sw.oz.au) or myself (frank@atom.ansto.gov.au).

Regards,
Frank Crawford
AUUG-AARNET Administrator
AUUG Inc.



On behalf of the organisation listed below I wish to apply to be a Mail Service Affiliate Member of AARNet, and accordingly request that AUUG Incorporated arrange for the Australian Vice-Chancellors' Committee (AVCC) to maintain on my behalf an electronic mail delivery record in the Australian Academic and Research Network (AARNet) to allow my organisation to send and receive electronic mail carried across AARNet.

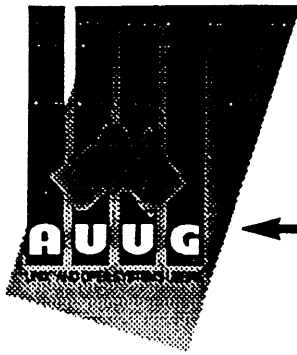
I understand that the AVCC may consult the recorded logs of my organisation's usage of AARNet facilities for 1990, and determine that I am ineligible for registration under the terms of the agreement between AVCC and AUUG Inc. I understand that AUUG Inc will invoice my organisation for this service for the calendar year 1991 and for subsequent years unless it receives my organisation's written advice to terminate the Affiliate Membership of AARNet.

I understand that the AVCC and AUUG Inc maintain the right to vary the Mail Service Affiliate Membership charges from year to year, and maintains the right to cease offering this service to my organisation at the start of any year, at their discretion. I understand that in the event of any variation of the Mail Service Affiliate Membership of AARNet, my organisation will be advised in writing by the AVCC or AUUG Inc to the address below.

I understand that in consideration of the AARNet Mail Service Affiliate Membership charge, AARNet will undertake to maintain a mail directory entry which will direct incoming electronic mail to the AARNet gateway system(s) which I have nominated below. Furthermore I accept that there is no other undertaking made by AARNet in terms of reliability of mail delivery or any other form of undertaking by AARNet or the AVCC in consideration of the payment to AARNet for the maintenance of the mail directory entry on AARNet.

I undertake that my organisation's use of the mail delivery services over AARNet will not be used as a common commercial carrier service between my organisation and other organisations receiving similar services from AARNet, nor will it be used as a commercial carrier service between branches of my organisation. Furthermore my organisation undertakes to use AARNet facilities within the terms and conditions stated in the AARNet Acceptable Use Policy. I accept the right of the AVCC or AUUG Inc to immediately terminate this service at their discretion if these undertakings are abused by my organisation (where the AVCC retains the right to determine what constitutes such abuse).

I understand that a fee is payable with this application: of \$250 if the host/hosts covered are owned by a member of AUUG Incorporated, or \$600 if the host/hosts covered are not owned by an AUUG member. Corporation host owners may only claim the member price if the corporation is an Institutional member of AUUG Inc. My cheque payment of either \$250 or \$600 as appropriate is enclosed with this application.



AARNet

MAIL SERVICE
AFFILIATE MEMBERSHIP
APPLICATION FORM

PLEASE PRINT CLEARLY!

Date: _____

Name of Organisation/Owner: _____

Signed: _____ AUUG Membership No (if known): _____

Name: _____ Position: _____

on behalf of the organisation named above.

Address: _____

_____ Postcode: _____

Administrative Contact: _____ Title: _____

E-Mail: _____ Phone: () _____

Fax: () _____

Technical Contact: _____ Title: _____

E-Mail: _____ Phone: () _____

Fax: () _____

Mail Delivery Information to be entered in AARNet (see Note A next page)

Domain Names Requested: _____

Gateway Addresses: _____

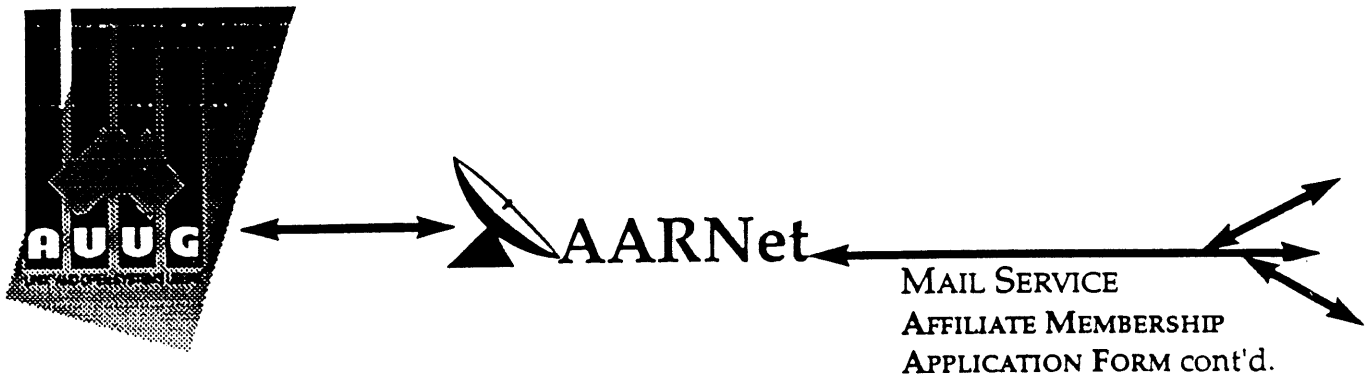
Expected Link Protocol: UUCP SL/IP MHSnet Other: _____

* * * *

Send this page only to:

AUUG Incorporated
PO Box 366
Kensington NSW 2033

Phone: +61 2 361 5994
Fax: +61 2 332 4066



Note A. Mail Delivery Information

Two items of information are required: firstly the preferred name of your mail host (or the domain name(s) of a group of hosts) in Internet domain name system format, and secondly the name (or names) or AARNet gateway systems who will accept electronic mail over AARNet (and connected overseas networks) on your behalf and forward it to you. The primary requirement for an AARNet gateway is its ability to recognise your host/domain addresses and perform the necessary mail header rewriting reliably.

Please check with the postmaster at your preferred AARNet gateway host site before citing them as a gateway for AARNet mail delivery. For ACSnet addresses (*.oz.au), the host "munnari.oz.au" (Melbourne University) is a recommended gateway. Other possible sites include "metro.ucc.su.oz.au" (Sydney University), sirius.ucs.adelaide.edu.au (University of Adelaide), uniwa.uwa.oz.au (University of WA) and bunyip.cc.uq.oz.au (University of Qld). Note that all gateway addresses must be fully domain qualified.

Example Mail Directory Information request:

Mail addresses required:	acme.oz.au, *.acme.oz.au
Mail Gateways (primary)	gw.somewhere.edu.au
(secondary)	munnari.oz.au
(secondary)	unnet.uu.net

The addressability of your site and the willingness of your nominated gateways to act in that capacity will be determined before registration proceeds. Processing will be made faster if you contact the postmaster at your nominated gateways in advance to inform them of your intentions. Your nominated technical contact will be notified by email when registration is complete.

Note B. Getting Connected

New sites will need to find an existing AARNet or ACSnet site who will accept their site as a connection, and also select a protocol for transferring data over their mutual link. Although the UUCP package is a standard inclusion with UNIX, it is little used in Australia due to its relatively poor performance. Other possible choices for your link protocol include SLIP (TCP/IP) and MHSnet.

Among a number of organisations who provide connection services, Message Handling Systems Pty Ltd have announced a special offer on both their link software and connect time for AUUG members. For more details on this offer, contact Message Handling Systems on (02) 550 4448 or elaine.mhs.oz.au.

THE INTERNET -- ON-RAMP TO THE INFORMATION SUPERHIGHWAY

by Tom Vassos

People often wonder when the Information Superhighway will arrive and what it will look like. Well, its predecessor already exists. It's called the Internet. Although it's not quite an Information Superhighway, at least it's an "Information Pathway" -- with over 20,000 computer networks all connected together.

The Internet network is now used by 20 million people in 132 countries, and 150,000 new users are joining the network every month. The Internet Society president has predicted that there will be a billion Internet users by the year 2000!

"INTERNETworking" will revolutionize our personal lives and the way we do business, much like the phone did in the 20th century, personal computers did in the 80s, and fax machines did in the 90s.

WHAT THE INTERNET CAN DO FOR YOU

There are several reasons why you would want to become an Internet user.

1. ELECTRONIC MAIL

The first reason is simple - electronic mail or E-mail. By connecting to "the Net", you can send mail to anyone in the world at a fraction of the cost of more traditional forms of mail. For example, a letter from the U.S. to Canada would cost 50 cents, a fax would cost \$2, but an E-mail message would only cost 10 cents or less. E-mail messages to distant countries could be 1/50th the cost of a fax.

The New York Times recently reported that human rights dissidents are relying less on phones and faxes, and more on the Internet to express ideas that are free of government censorship.

2. CONFERENCES

Conferences are discussions between several or even hundreds of people. There are thousands of different topics being discussed ranging from politics to Elvis. Academics swap research findings and businesses search out investment and licensing partners. AIDS and cancer sufferers provide mutual support for each other. Our Open Systems association runs its Board meetings electronically.

An MIT student even posted some questions from his take-home exam and had some help from economists from around the world!

3. INFORMATION RETRIEVAL

Another advantage of connecting to the Internet is the incredible storehouse of information that you can access:

- * News from around the world
- * The complete works of Shakespeare
- * Government spending information
- * Research material on stocks
- * Product descriptions (you can even order products)
- * U.S. White House Press Releases
- * U.S. Supreme Court rulings
- * Encyclopedia Britannica
- * Geographic information such as the population of France
- * Hottest jazz clubs in New York
- * Recipes, poetry, and much more.

GETTING CONNECTED TO THE INTERNET

To get connected to the Internet, contact an online services company in your country. In the U.S., companies such as Prodigy(1), Advantis(2) or CompuServe will sell you access to the Internet as part of their service.

IBM announced that a future software product code-named "WARP", will also have an option for automatic access to the Internet.

NAVIGATING THE INTERNET

As we have discussed, there is a vast amount of information available on the Internet. The problem has been that it is very difficult to sift through all of the data to actually find what you're looking for.

To improve this situation there are now several products on the market called "software agents" which are aimed at helping specific users find the information they are looking for. They can "filter" through mountains of information to retrieve specific data that the user has asked for.

Another free software product available is called "Mosaic". It is a tool that allows users to search, retrieve, display and store data from anywhere in the world. This data can be in the form of text, images, video and audio.

"Mosaic" uses an intuitive and visual interface which makes it much easier to navigate through the Internet to find what you're looking for.

LEARNING ABOUT THE INTERNET

The next step is to learn about the Internet and the information resources available to you. Most book stores now carry several introductory books about the Internet.

You may want to consider titles such as: "Navigating the Internet" by Mark Gibbs and Richard Smith (Sam's Publishing); "The Internet Navigator" by Paul Glister (Wiley Publishing); or "The Whole Internet" by Ed Krol (O'Reilly & Associates).

Next you may want to attend a conference where you can learn more about the Internet and software products such as Mosaic. (For example, "The Second International World-Wide Web (WWW) Conference" will be held in Chicago, U.S.A. on October 17-20.(3))

Finally, you may want to take an introductory education course to learn about the Internet. Several are now being offered in almost every major city. If you have already arranged access to the Internet, why not learn about the Internet through the Internet itself. The University of Alabama offers a free "Internet Training Workshop" course. This includes daily 5 to 10 minute lessons which are sent directly to you every day for a month via the Internet.(4)

BUSINESS USE OF THE INTERNET

The use of the Internet for commercial purposes is exploding.

Companies can streamline business communications with their suppliers, partners and customers.

Product descriptions can be made available and orders can be taken. Support can be provided and customer inquiries can be answered.

Pizza Hut has even announced that you can order a pizza electronically via the Internet. This new service, called "PizzaNet", is being piloted in Santa Cruz, California. (Now, if they could only figure out how to deliver the pizza back through the Internet!)

INTERNET AND FACSIMILE (FAX) TECHNOLOGIES

Another factor which will make the Internet even more popular is the marriage between Internet and fax technologies.

The Internet is capable of sending E-mail messages directly to a fax machine. Therefore companies can begin to make use of the Internet even before their customers or suppliers have begun to use the system.

This Internet to fax alternative can also be very cost effective. A company wanting to fax information from the U.S. to France for example, could send the item via the Internet and eliminate the long distance charges.

IBM's INVOLVEMENT IN THE INTERNET

IBM has also proven that they are committed to Open Systems and vehicles such as the Internet as a form of open communications.

They have already made significant commitments and investments in this marketplace. For example, several years ago IBM, MCI, and Merit founded a not-for-profit corporation called Advanced Network & Services. This corporation has had a major involvement in upgrading the backbone for the Internet network.

SOCIAL AND ECONOMIC IMPLICATIONS

The exploding use of the Internet and electronic communications could have enormous social and economic implications.

Mr. Andy Archambault from the U.S.A. found this out the hard way. He became the first person to be charged with "Stalking" by sending unwanted and repeated advances to a female via E-mail.

The Internet is a new mode of personal communications that could revolutionize our lives.

The Internet is a new way of doing business that could revolutionize global trade.

Now it's your turn to harness this amazing resource.

Tom Vassos (MBA, BES) is the Worldwide RS/6000 Software Channels Manager for the IBM Toronto Laboratory. He is also the Chairman of UniForum Canada (a non-profit association dedicated to UNIX and Open Systems) and is also a part-time instructor at the University of Toronto. He can be reached via E-mail at: vassos@vnet.ibm.com

NOTES:

- (1) For more information on Prodigy, call 1-800-776-3449 (then option 1). (number valid in North America)
- (2) For more information on Advantis, call 1-800-888-4103 (from the U.S.) or 1-800-268-3100 from Canada.
- (3) To register contact Donna Esterling at 1-617-621-8779 (in the U.S.A.) or E-mail at: wwwF94@osf.org
- (4) To subscribe to the University of Alabama "Internet Training Workshop", send mail to:
LISTSERV@UA1VM.UA.EDU
In the body of your message, include this command:
SUB ROADMAP yourfirstname yourlastname
(For example, in the body of my note I had to type: SUB ROADMAP TOM VASSOS.)

Book Reviews

Well here is another group of book review on many assorted topics, and this month I'm in the unusual position of having more reviews than I have space for. Those that didn't make it into this edition will certainly be in the next.

Probably the highlight of this edition is Greg Black's review on *Tcl and the Tk Toolkit*, as he says, this is a book that is very topical. As well, I have a number of others just as important. Certainly the two reviews of new X11 manuals are just as relevant, especially considering their price.

There are also a couple of reviews of less technical books, that are aimed at the mass market. These reviews are possibly more important than those of the technical books, because of the need to sort out the good from the bad in the mass market!

Just now I'm out of books for review, but I hope to have more in the very near future. The current practice is to post a note to the newsgroup *aus.org.auug* when we have new books available. Unfortunately, this disadvantages members without network connections, or on the end of a low speed link. For people in such a position, either mail, via the AUUG PO Box, or fax me on (02) 717 9273, with your contact details and preferences.

Frank Crawford

Tcl and the Tk Toolkit

by John K. Ousterhout
Addison-Wesley
1994, 478 Pages
ISBN 0-201-63337-X

Reviewed by
Greg Black
Greg Black & Associates
<gjb@gba.oz.au>

Anybody who attended the recent AUUG Conference in Melbourne will have been reminded of the growing importance of some relatively recent high level languages - three of the tutorials and a number of conference sessions dealt with two in particular: Larry Wall's *perl* and John Ousterhout's *tcl* and *tk*.

As a Unix programmer for many years, I do most of my work in C - but with frequent forays into the thickets of awk, sed, sh, lex, yacc, lisp and other nasty languages of my own devising. Recently, I've been looking for an embeddable language for a new project and was wondering if I should write one myself when this book arrived with its detailed introduction to a language that was not only embeddable, but came with an extension for rapid development of GUIs under X11.

In his work as a researcher and teacher at Berkeley, Ousterhout had come up against the

same problem of needing a special-purpose language. But he had got sick of a series of half-baked little languages and decided to write a serious tool - the Tool Command Language - that could function either as a stand-alone programming language or as an embedded scripting language inside C programs. While he was at it, he developed one of the major extensions to Tcl, the Tk package that is used for X11 application development.

And now we have the book. My initial impressions were positive. The writing seemed clear, the explanation of the concepts and syntax was easy to follow, the division into four parts made sense and the Table of Contents made the whole enterprise look most impressive. Part 1 covers writing Tcl scripts, Part 2 does the same for Tk. Parts 3 and 4 deal with the C language interfaces for Tcl and Tk respectively. This allows you to read those parts that are relevant to your needs. As I knew nothing about Tcl or Tk (apart from a very general idea of their purpose), I just read it from front to back.

There are many thoughtful touches, such as the little paragraphs set in italics that contain warnings or recommendations to help reliable code. There are dozens of tables that summarize most aspects of the package. A great deal of attention has been paid to completeness in each section (at the price of some repetition and lapses into turgid style). And the level of the writing, with a few notable exceptions, has been

carefully targeted at the intended audience.

It wasn't all perfect, however. The book's design is one of its major failings. This may seem trivial, but when it becomes an obstacle to the message, it's rather important. Apart from being ugly, the ragged-right format (which is *extremely* ragged) makes the text quite difficult to read. And the fixed width font that was chosen is a disaster - it's too big for the surrounding text, the (frequent) underscores keep disappearing into the dotted i's and crossed t's on the line below, spaces get crowded out of existence and the indentation of the displayed examples is irregular. I'm currently teaching myself three languages from three different books. This is by far the hardest to deal with as a book.

Another problem is one that is only too common in this kind of book: although a reasonable format for displaying interactive use of the interpreter was announced, with facilities to distinguish user input from program output and error output, it is not followed consistently. This leads to confusion in the reader, especially when he is just beginning to suspect that the beautiful new world of simple syntax which has been promised might be a figment of the imagination.

The major disappointment with the book, however, was the discovery that, despite its length and its verbose coverage of some details, it is not a complete reference. For that, Ousterhout tells you to go to the electronic reference documentation that comes with Tcl/Tk. I'd have liked the book to have been complete and I think the reorganisation that would have been forced by that would have produced a clearer final result.

While I was reading it for this review, I naturally kept a watching brief on the *comp.lang.tcl* news group. As some readers will know, Richard Stallman of the GNU Project has recently published an article on a number of news groups entitled 'Why you should not use Tcl'. Not surprisingly, the ensuing debate has been characterized by more heat than light, although a number of excellent points have been made, both for and against Tcl (and also for and against lisp-like languages).

I think Stallman is largely right, but his vapourware offerings are not of much practical use to people who have work to do this year.

Certainly, Ousterhout does not claim that huge projects are suited to Tcl alone. He considers that such things should be written in C, with help from Tcl where appropriate.

This leads me to the second serious deficiency of his book. Although he tells us how to write Tcl and Tk scripts, he never explains *why* we might choose Tcl for a particular job; he doesn't describe a project that cries out for Tcl; and he gives no real examples in the book. Some of these issues are addressed in the Tcl distribution, which includes a number of packages written in Tcl and some pointers to other useful packages - so examples can be found. Nevertheless, I think there should be some in the book.

Partly as a result of this, and partly because of various deadlines, I've yet to write any Tcl code. I've written a little interactive database program with Tk and that was quick and easy. It even works. But I don't like the Tcl syntax - rather, I don't trust it to work without lots of surprises. Nothing in the book convinced me otherwise and the discussions on *comp.lang.tcl* seem to support the idea that it's not as straightforward as the author claims.

Another factor that bothered me was the rigidity of Tk's approach. Ousterhout imposes his own ideas in matters such as the right way to handle the focus; and he uses a different method of marking and pasting the X11 selection from that used by other common applications such as *xterm*. Moreover, the Index is hopeless - I can't find that stuff about using the selection now, and I've just spent several minutes looking.

I was puzzled by the references to things that don't work in versions of Tk prior to 4.0 - given that the book is supposed to cover Tk version 3.6. No clues are given about the timetable for 4.0, nor is there any list of its features.

Although this is probably not a major issue for readers of *AUUGN*, it's worth noting the lack of coverage for users outside the Unix world. Tcl runs on a number of other platforms, but they don't get any attention at all.

A final caveat is the question mark that must hang over Tcl's status, now that Ousterhout has gone to develop a new version of it for Sun. I would like to believe assurances that it will remain available under its present terms, but I've been around too long and been disappointed too many times to put much faith in that.

Despite its flaws, *Tcl and the Tk Toolkit* is nevertheless a pretty complete and useful introduction to Tcl and Tk. It's enough to get you started writing real applications (so long as you use Unix) and, until Prentice Hall publish Brent Welch's book *Practical Programming in Tcl and Tk* (probably next year), this is the only book on the subject. (I have printed out a draft of Welch's book, but didn't have time to read it before the deadline for this review.)

And, despite Richard Stallman's anti-Tcl campaign, I am certain that Tcl and Tk will be around for quite a while and that lots of people will create and develop useful software using these tools - perhaps you will be among them. If you think you want to learn about the Tcl/Tk toolkit, whether to evaluate it, or because you've already decided to use it, this book is probably worth the cover price.

Solaris International Developer's Guide

by Bill Tuthill
SunSoft Press, Prentice Hall
1993, 216 pages
ISBN 0-13-031063-8

Reviewed by
Jon Wright
Guru Software Services
<Jon.Wright@Citibank.com.au>

As the title suggests, this book is about internationalisation, commonly called i18n (because it starts with 'i', ends with 'n', and has eighteen letters in between). It is directed at Solaris (2.0+) and will not be a particularly useful reference to programmers on other systems. However, it does provide a basic introduction to the various methodologies available.

For the Solaris developer or user, the book covers a great deal of material - but all of it very briefly. There are sections on i18n, localisation, character sets, writing code and also international interfaces to various SunSoft products such as Open Windows, XView and OLIT. As well as programming concerns there is a brief discussion on marketing, writing accompanying documentation, standards and potential future developments. Finally the book concludes with a number of appendices which cover keyboards,

localisation codes and the Asian Solaris environment.

Overall the book is a wonderful but brief introduction to the ideas of localisation and internationalisation. As such, it is ideal for someone with little or no knowledge of either topic or the importance of the issues raised.

This contrasts with the introduction of the book, where the author suggests that the book is intended for 'software developers and business managers who want to design global products and applications for the Solaris environment'. Unfortunately the book falls short of this goal, while it is an ideal resource for business managers and non-technical staff, it is woefully inadequate from a programmer's perspective.

Target market aside, the book is well presented, clear and easy to follow. The topics covered are significant and will become more important over time. While insufficient as the sole resource for a programmer it does provide a simple introduction to the topic and would be a valuable asset in the company library.

Teach Yourself UNIX in a Week

by Dave Taylor
Sams Publishing
1994, 714 pages, \$US28 (paperback)

Reviewed by
Jon Wright
Guru Software Services
<Jon.Wright@Citibank.com.au>

This book was a type of challenge - could one really learn UNIX in a week? I seem to remember learning it over a number of years and it didn't seem possible to encapsulate all that in 714 pages and only a week of reading. (Actually the week is a seven day week, but that does not lessen the hurdle because the book includes sections on programming and the internet).

The book is large (of course) and paperback but I had no trouble with keeping it open at the right page. The style is easy to follow, and there are plenty of examples throughout the text. Some of these examples encourage the student to try out commands on a UNIX system. In some cases the commands will not work and the author then

explains why and how to rectify the problem.

At the end of every chapter is a series of useful revision questions that ensure the reader has understood the material. (Answers are supplied in an appendix). As well as examples, the text is interspersed with grey boxes to emphasise or illustrate various points. Each of these boxes is accompanied by a symbol to denote the type of box - this is eye catching and certainly complements the surrounding material. Readers of **Life with UNIX** (Libes and Ressler) will be familiar with this approach. Overall the layout is good and if the reader follows the material sequentially then there is a logical accumulation of material. Each lesson (there are 21 in total) has a set of goals at the start and a summary at the end.

The 21 'lessons' include: introduction, system access, filesystems, permissions, files, filters, vi, emacs, shells, job control, printing, searching, networking, programming, and the internet. Each lesson is self-contained but may build on knowledge acquired earlier. This is important for novices but would not present a problem for experts. It is worth noting that the book is not operating system specific, when significant variations occur in common versions, the author discusses any potential differences. In addition, the volume is very up-to-date. As an example, the chapter on the internet includes a discussion of the world wide web.

After receiving the book, I perused it quickly and decided that it looked good but seven days would be an impossible target. I was wrong! I tested the 'week' with some non-UNIX literate colleagues (main-framers) and with some encouragement they completed the course on time. Next, I tackled the book myself, and despite eleven years of experience with UNIX, I learnt some new tricks and discovered a few shortcuts. Overall this is an excellent book which I would highly recommend for novices and experts. The novices really can learn UNIX in a week and the experts may pick up some new ideas. (Also the experts may find it easier to loan this book to novices than to try and explain UNIX themselves).

UNIX in Plain English

by Kevin Reichard and Eric F. Johnson

MIS Press

1994, 300 pages, \$29.95

ISBN 1-55828-345-5

Reviewed by

Adrian Booth

Arena Technology

<arena@dialix.oz.au>

The stated premise of the authors in writing this book is that Unix manual pages are not very helpful since you need to know the name of a command before you can read its man page, and that the man pages are geared for the "experienced user" in any case.

Their unspoken premise seems to be that Unix users just want to be able to do the same things they can do in DOS: all that other stuff is too complicated. For example, awk "...is an advanced tool that's far too complicated for this introductory work". sed is not mentioned in the book at all, presumably because it is one of the "...many obscure Unix commands that you'll never even come close to using".

The first chapter contains a very brief and light overview of essential concepts: what commands are (complete with a friendly reminder that computers are dumb, they just follow your commands); files; directories; standard input/output. One of the two sample pipelines they present will not work as it is explained, which will no doubt confuse this book's audience.

The "Unix in Plain English" chapter is essentially a much simplified permuted index: for example, to learn how to "split a file into smaller files", see `csplit` and `split`.

Next follows a Unix/DOS cross reference which is geared at the DOS user wanting to know the equivalent Unix command to do something. Fully half of the DOS commands have no Unix equivalent: it is clear that DOS has twice the functionality of Unix!

Then comes an alphabetical listing of Unix commands, which are categorised into which subsequent chapter (general purpose, text processing, communication, printing, or file manipulation) they are more fully described.

These subsequent chapters seem to consist of simplified and slightly chattier man pages, but man pages nonetheless (including synopsis, purpose, options, examples, related commands, and notes). The similarity to the man pages we are used to is quite pronounced: for example, the `cal` entry says "The command `cal 94` displays the calendar for the year A.D. 94, not 1994. Also, the calendar is based on the British/American convention. Try `cal 1752` to see the jump to the Gregorian calendar".

There is little depth to the description of each command: simply a short description of the more commonly used options, plus perhaps one or two simple examples. The entries for `awk`, `nroff` and `troff` only give command line options for the commands themselves, and contain no description of how to program them. (Also, I do not recommend that you follow their `troff` example, which pipes the output of `troff` directly into `more`).

A few other points: the "Printing Commands" chapter has no entry for `lpr`, but the `lp` entry says "...on some systems, you may need to use the `lpr` command instead". `chmod` is described in the "General Purpose" chapter, `chown` in "File-Manipulation Commands", and `chgrp` in "System-Administration Commands".

`cpio` is also described in the "System-Administration Commands" chapter:

"This rather involved command is meant for true system administrators, not for those of us who *putz* around with system-administration commands as the need arises. Because of this, we suggest that you check your system documentation before using this command. Besides, the `tar` command is much easier to work with". Only problem is, `tar` isn't described in the book at all!

Then follows a reasonable chapter on shell programming, and finally a big surprise: the last chapter contains a description of FTP commands (did you know that FTP is "rapidly becoming the most popular way to grab files from another networked computer"?).

The book closes with a Bibliography, which lauds the companion book to this one (which "more fully explains" commands, and also "explains in depth" the underlying concepts of Unix). On the other hand it describes two O'Reilly texts - *Learning the UNIX Operating*

System, and *UNIX in a Nutshell* - as "A terse introduction to some basic Unix concepts" and "More than you ever wanted to learn about UNIX commands", respectively.

Treat this book like a cliché and avoid it like the plague. If this is the level of book you or your users need, do yourself and them a favour: discover man `-k` or `apropos`, and get the appropriate O'Reilly Nutshell book for your system instead.

**X Window System
Administrator's Guide
for X11 Release 4 and Release 5**

by Linda Mui and Eric Pearce
O'Reilly & Associates, Inc.
1993, 346 Pages + CD-ROM, \$120.00
ISBN 1-56692-052-X

*Reviewed by
Gordon Turner
<gordont@dialix.oz.au>*

This is the 8th Volume in the O'Reilly series of guides to the X Window System. The reviewed book is the third re-print in July 1993, which also includes a CDROM, see further on, the first print was in October 1992.

The book fills the void between developers, programmers, and end users of X Window's, that area of support and administration. Such "simple" topics such as configuration of user environments for use under X Window's to more involved areas such as font management, and X terminals. (Though in reality user environments can be as complicated as any other area of X Window administration)

The book starts out explaining the X Window concept, builds on this the setup of user environment, and covers configuring such things as, the X display manager, font management, colour management (still cannot spell this as "color"), and X terminal administration. Appendices cover the use and compilation of Public Domain software, Use of X in non-Unix environments, the Resources and Key Sym components, and error messages generated by X Window.

The chapter on X Window Security I found particularly interesting. From this I now have a

better understanding of the available methods to secure X Window sessions, or more importantly the weaknesses in securing X Window's :-)
While not at the top of the list in sites I currently work in, with increasing use of Wide Area Networks, and connections to the Internet, this area will become more important.

Font management is well explained. An area that can seem like a real nightmare if you attempt to delve into it unaided. Colour management is covered well, maybe this helps to explain to users why they have problems with certain applications wanting access to all of the colour table available. Catch is they want a solution and it is a commercial package we are talking about :-)

The CDROM included with the latest revision of the book makes an excellent resource. For those without Internet access, or even those with :-), the bundling of source code and binaries in one convenient package is a great idea. The CD is in ISO9660 standard with Rock Ridge Extensions (this means you get meaningful filenames if this functionality exists on your system, Sun, Linux, & BSD support it). Provided on the CDROM is source, and for some platforms binaries (Sun - SunOS, DEC - Ultrix, and IBM - AIX), for X11R4 and X11R5, as well as much of the contributed code for X Window. Available on the CDROM is the entire source and examples from the O'Reilly series of X Window Guides. Finally there is a tar file with source to compile for a Rock Ridge extension reader for almost any platform. The author has not tried this out as I am fortunate enough to have access to Sun systems and Linux :-)

In typical O'Reilly fashion the book is well set out and makes an ideal reference. Although the targeted audience is those who support and administer networks using X Window's it makes an ideal companion for the rest of the guides. Developers (programmers), and power users will find this book a useful addition.

**Motif Programming Manual
Second Edition (Volume Six A)**

by Dan Heller and Paula M. Ferguson
O'Reilly & Associates
1994, 972 pages, \$69.96 (Softcover)
ISBN 1-56592-016-3

Reviewed by
David J. Hughes
Bond University
<Bambi@Bond.edu.au>

For many people, including myself, the original "Motif Programming Manual" has been the material used to self-teach Motif programming. It has proved to be one of the most accepted books on the subject of Motif outside of the actual OSF documentation. The second edition of the book brings its contents into line with the functionality provided by release 1.2 of Motif and also fills in a few of the holes found in the original edition.

In the usual style of the O'Reilly X Window series, volume 6A is structured in a way that allows it to be used as both a tutorial and a reference for the subject. Starting on the first page with the usual "Introduction to Motif" chapter, this book may be used by the complete novice to dive into the often daunting world of Motif based GUI development.

The book is based on a collection of chapters that concentrate on a particular widget family. Each widget family is explored in depth including the provision of vast quantities of sample source code. Along with simple "how to" type examples, several convenience routines are provided that allow for faster development. All sources, including both the basic examples and the more useful library functions are freely available over the Internet.

The main differences between this edition of the "Motif Programming Manual" and the original edition are the inclusion of Motif 1.2 features and also a detailed overview of UIL, the Motif User Interface Language. UIL was not covered in the original edition and this was thought by some to be its major downfall.

David Brennan has provided 5 chapters covering UIL at all levels. 150 pages of the book are dedicated to UIL starting with a simple UIL version of the infamous "Hello World" through

to the use of UIL for building the GUI for complete applications. A discussion on the pros and cons of UIL is also presented to enable the reader to decide whether UIL could/should be used in a particular situation.

New material from Motif 1.2 covered in the book includes internationalisation, drag and drop and tear-off menus, as well as changes to the release 1.1 functionality in the areas of resource management, keyboard traversal and colour. It also provides details of the changes made to the individual widget classes in the new release.

This new edition of the "Motif Programming Manual" brings it into line with the current state of the software and, in my personal opinion, provides all the information required for a complete and thorough reference for Motif programmers of any level.

**The Whole Internet
User's Guide and Catalog
Second Edition**

by Ed Krol
O'Reilly & Associates
1994, 543 pages
ISBN 1-56592-063-5

*Reviewed by
Phil McCrea
MIS Research*

<philipm@spg.mhs.compuserve.com>

This book is the second edition of Krol's already popular book on the Internet. It begins with four pages of positively glowing reviews of the first edition of the book which was released in September 1992 - including a review from Ian Hoyle of BHP, the esteemed Chairman of AUUG 94. I must confess to not having read the earlier edition, but my opinion of this book concurs whole-heartedly with the comments of the reviewers of the earlier edition.

The book was actually written for a person like me - i.e. someone who has played a fair bit with Unix and used email and the like, but not really had a systematic overview of "the net". It assumes that the reader is computer literate, and not necessarily a Unix user - the Preface says it is aimed at the "garden variety" computer user. Although most of the computer dialogues are with Unix, it does provide occasional examples

for DOS, VMS and MacIntosh environments.

Having said that, there is something in the book for everyone, and experienced net users will find useful information in the later chapters. There are several lengthy appendices, including a copy of the Whole Internet Catalogue, which is an encyclopaedic listing of various resources that are accessible on the net. Such an index goes out of date quickly of course, and the reader is pointed in the direction of an on-line version. Other appendices deal with how to get connected, international issues, acceptable use of the net, and an 8 page Unix primer.

The first few chapters are aimed at readers who are new to the net. I scanned these quickly, and managed to pick up quite a few useful snippets of information. The "middle order chapters" deal in some details with remote logins, ftp, email, and network news. Lots of examples to try, so it really becomes a hands-on affair. I found the last part of the book the most interesting part with chapters onarchie, finding people, gopher, WAIS, and World Wide Web. As this was my first introduction to WWW, it was of more than passing interest - and I have to confess I am now hooked!

All in all, a most readable and useful book for net novices and experts alike. The Internet being what it is, though, the book probably has a useful life of no more than two years, at which point in time I suspect Mr Krol will bring out the third edition...

AUUG BOOK CLUB & PRENTICE HALL AUSTRALIA

20% DISCOUNT TO AUUG MEMBERS

Please send me a copy/copies of the following book —

SOLARIS International Developer's Guide
ISBN: 0130310638, Paper, 1993, \$65.95*

SOLARIS Porting Guide
ISBN: 0130303968, Book & Disk, 1993, \$59.95*

*Deduct 20% from listed retail price

Name: _____ Position: _____

Organisation: _____

Address: _____

_____ Telephone: _____

Please send my book/s on 30-day approval (tick box)

Enclosed cheque for \$ _____ (Payable to 'Prentice Hall Australia')


Charge to me **OR** Company purchase Order No. _____

Please charge my: Bankcard Visa MasterCard

Credit Card No:

Expiry Date: _____ Signature: _____

Mail or fax completed order form to Prentice Hall Australia, PO Box 151,
Brookvale NSW 2100

OR  Use our FAST PHONE SERVICE by calling Liz Guthrie SYDNEY (02) 939 1333



Prentice Hall Pty. Ltd.
7 Grosvenor Place, Brookvale NSW 2100.
Tel: (02) 939 1333 Fax: (02) 905 7934

A Paramount Communications Company



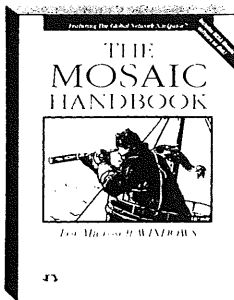
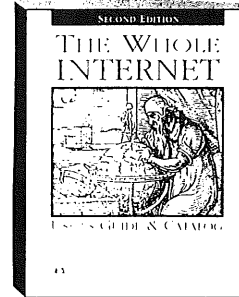
The Art of Information

New Books

THE WHOLE INTERNET USER'S GUIDE AND CATALOGUE 2nd Edition

Author: Ed Krol Price: \$49.95 ISBN: 1-56592-063-5

The best book about the Internet just got better! This is the second edition of O'Reilly's bestselling introduction to the Internet, a resource of almost unimaginable wealth.



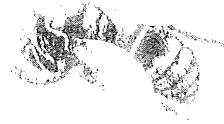
THE MOSAIC HANDBOOK for MICROSOFT WINDOWS (Bk/Dsk)

Author: Richard Koman Price: \$59.95 ISBN: 1-56592-094-5

Using Mosaic, a user can move from document to document, viewing text, graphics, video, audio - without having to worry about where the information is located

from O'Reilly,

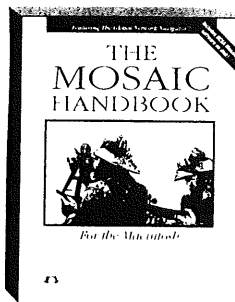
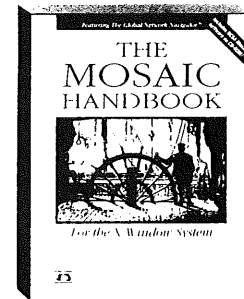
the Leading



THE MOSAIC HANDBOOK for the X WINDOW SYSTEM (Bk/CD)

This book comes with the public domain version of NCSA Mosaic on CD. The disk also contains the Mosaic Handbook Home Page, with links to all of the servers mentioned in the book.

Author: Koman & Ferguson Price: \$59.95 ISBN: 1-56592-095-3



THE MOSAIC HANDBOOK FOR THE MACINTOSH (Bk/Dsk)

Comes with Enhanced NCSA Mosaic on disk, a commercial version of NCSA Mosaic that improves upon what's available on the Internet, plus Mosaic Handbook Home Page, with links to all of the servers mentioned in the book.

Author: Richard Koman Price: \$59.95 ISBN: 1-56592-096-1

Internet Publisher

AVAILABLE FROM AUSTRALIA'S LEADING BOOKSELLERS

or call WoodsLane for the stockist nearest you

T.C.N. 003 667 549

NSW: Dymocks George St Sydney 2240411
 Dymocks Pocket & Technical Wynard Sydney 2240444
 Hotline Chatswood Sydney 4152265
 Dymocks North Sydney 9566771

VIC: Tech Books Melbourne (03) 663 3951
 McGills Melbourne (03) 602 5566
 Dymocks Melbourne (03) 663 1344

QLD: Dymocks Edward St Brisbane (07) 220 0152

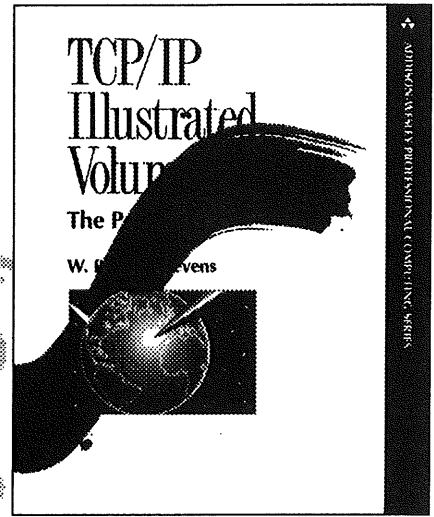
SA: The Bookshelf Adelaide (08) 223 3899
 Dymocks Adelaide (08) 223 5381

WA: Rellim Booksellers Perth (09) 321 5684
 Boffin Bookshop Perth (09) 321 5755

A.C.T. Uni Co-Op Bkshp ANU Canberra (06) 257 2673

ARIEL2

WoodsLane Pty Ltd Phone: (02) 979 5944 Fax: (02) 9997 3348 EMail: woods@tmx.mhs.oz.au



20% Discount to AUUG Members

TCP/IP Illustrated Volume 1: The Protocols

W. Richard Stevens

The innovative approach of *TCP/IP Illustrated* helps readers at all levels to truly understand how TCP/IP really works – whether you need to write applications that run over TCP/IP, or you’re responsible for managing and maintaining a TCP/IP internet.

TCP/IP Illustrated examines the entire TCP/IP protocol suite using a bottom up approach, starting at the link layer and working up through the application layer. The book also takes a functional approach, explaining features of the protocols in relationship to applications that use them.

TCP/IP Illustrated covers the following topics: Link Layer, IP, ARP, RARP, ICMP, ping Program, traceroute Program, IP Routing, Dynamic Routing Protocols, UDP, Broadcasting and Multicasting, IGMP, The Domain Name System, TFTP, BOOTP, TCP Overview, TCP Connection Establishment and Termination, TCP Interactive Data Flow, TCP Bulk Data Flow, TCP Timeout and Retransmission, TCP Persist Timer, TCP Keepalive Timer, TCP Futures and Performance, SNMP, Telnet, FTP, SMTP, and other TCP/IP Applications.

CODE 63346 (RRP \$50.95) AUUG Price \$40.75

ALSO FROM W. RICHARD STEVENS:

Advanced Programming in the UNIX Environment	Code 56317	(RRP \$51.95)	\$41.55
TCP/IP Illustrated Vol 2: The Implementation	Code 63354	Avail Jan '95	Price TBA

YES: I would like to order: QTY: _____ TITLE: _____

QTY: _____ TITLE: _____ QTY: _____ TITLE: _____

I enclose a cheque for \$ _____ **OR** Please charge my credit card No: _____

BANKCARD VISA MASTERCARD AMERICAN EXPRESS ID No: _____

EXPIRY DATE: / / AUUG MEMBERSHIP No: _____ PHONE No: _____ (Wk Hrs)

NAME: _____ SIGNATURE: _____

STREET ADDRESS: _____

STATE: _____ POST CODE: _____

Send your order to ➤

Addison-Wesley Publishing Company

Unit A1, 6 Byfield Street, North Ryde, NSW 2113, Australia.
Telephone (02) 878 5411 Customer Service Fax (02) 888 9404



!AUUGN

The following note appeared in AUUGN Vol 1 Number 4 and the response (next page) was published in AUUGN Vol 1 Number 5.

Somebody definitely has some interesting views about terminal usage. The following warning was discovered attached to a video terminal on this campus.



THE UNIVERSITY OF
NEW SOUTH WALES

P.O. BOX 1 • KENSINGTON • NEW SOUTH WALES
AUSTRALIA • 2033

WITH COMPLIMENTS

Please don't use
for long periods
unless you really
have to.
I suspect it is
jamming the system.
~~W~~

The editor is still in a state of shock.

Capt B. J. Smithie: This sketch is getting silly. Stop it at once.

The note reads:

Please don't use for long periods unless you really have to. I suspect it is jamming the system.

TO	Jan J
FROM	Dave H
DATE	5 JUN

I was most amused by your photocopy of my little note stuck on the terminal (AUGUR #4 p4). Apparently you don't know the full story. The terminal that was in question was a Serge-type terminal obtained in exchange for the G-740. It would appear that whenever the terminal was in use, the DJ-11 driver inevitably jammed up when servicing it. Removing the terminal seemed to cure the problem. And still on the subject of

TO	
FROM	
DATE	

Serge terminals did you know that switching off the electric jrg near it caused it to echo the least character typed? It got so bad that people used to type in 'D' whenever someone was using the jrg. One was unable to control the jrg by use of the CONTROL/J key however. None of the other terminals display this "feature".

Fond Regards
DCH

REPLY

No You Can't Have Root[†]

(How Software Vendors Can Help System Administrators)

Craig Bishop
Barwon Region Water Authority
Craig.Bishop@BarwonWater.Vic.Gov.Au

ABSTRACT

As Unix¹ matures more and more software vendors are entering the Unix market. The potential for profits within this large, expanding market is very attractive. Combine that with the advantages of portability and reusability on multiple platforms, the desire to get products to market becomes very strong. This paper addresses the concerns of Unix System Administrators who have to install and integrate these software packages. These concerns have increased with the influx of software vendors into the Unix market. Where do they come from? What experience do they have? What do they know about the philosophy and history of Unix? If they follow the guidelines in this paper, I probably won't care.

INTRODUCTION

Unix is becoming more common as the platform of choice for enterprise computing. Unix Systems Administrators (SysAdmins) are finding themselves in large networked computer environments with large numbers of varied software products from many vendors. Installation and integration of these software products takes a large proportion of a SysAdmins time, often too much.

As SysAdmins we are responsible for helping and educating software vendors to provide easily installed, secure, consistent, standards based products. This paper is written for software vendors.

There are many things software vendors can do to ease the burden of the SysAdmin. Many are very simple, some are harder but they will all make a SysAdmins work easier. The following sections offer do's and don'ts which cover many different aspects of product design and configuration.

THE INTERNET

"The Internet Architecture Board has estimated that the Internet has a monthly growth rate in computer hosts of 10 - 15%, making it by far the most rapidly growing electronic network in the world." [Lyn93]

"Sufficiently advanced technology is indistinguishable from magic."

Arthur C. Clark

[†] This paper was presented at AUUG94, but was not published in the proceedings of the Conference.

1. Unix is a registered trademark of someone but I'm not sure who anymore.

This may seem like a strange place to start but the magic of the Internet has an impact on almost every section to follow. The Internet is the life blood of any large Unix site making full use of all the resources available. Many public domain software packages are of exceedingly high quality and useful in the everyday operation of any Unix site. Facilities like worldwide news, electronic mail exchange with colleges and international hardware vendors, access to electronic databases, etc. make the Internet an enormously valuable resource.

Now that's fine for the any Unix site and those large hardware vendors. What does it have to do with software vendors? Everything!!!!

If the software vendors are on the Internet then they are contactable too. Barwon Water will (hopefully soon) implement a policy where any software or hardware vendor we enter a contract with will be required to have an mail connection to the Internet. Presently we strongly encourage vendors to connect. Vendors who have access to mail have many advantages over those that do not. The following sections will make reference to the use of an Internet connection to improve and enhance the relationship between a software vendor and a Unix site.

INSTALLATION

This is your first chance to impress the SysAdmin. Unfortunately this is where most SysAdmins begin to despair. Installations can not always be made simple but they can give the SysAdmin confidence in the product and a willingness to expend more effort integrating the software into the site.

Newer operating system releases like Solaris² provide entire frameworks for the installation and configuration of third party software onto a machine. If these setups exist on any platform it is criminal to ignore them. The SysAdmin will already have a good understanding of the installation process. Combining that with the robustness of a well exercised installation suite, will greatly increase the chances that a software product can be installed simply and correctly. Another benefit is reduced documentation, the hardware vendor will already have supplied documentation on the installation suite.

WHERE?

The software must make no restrictions on where in the directory hierarchy it can be installed. Other than small additions to system files like, rc files, services, etc. a software product should **NEVER** require any files installed outside the installation directory.

HOW?

Installation scripts are by far the most common method of installing software. These are usually fine as long as they do **NOTHING** outside the installation directory, or at least give the SysAdmin the option to do these things manually. The reason for this is every site is different and the vendor can not take account of every configuration and allow for every subtle difference.

Check the install/configure scripts from the perl or patch sources on the Internet to see how many variations should be handled.

Provide plenty of documentation on both the script and the manual parts of the installation.

Changes to kernel configuration files and installing new kernels are particularly prone to problems at large sites. Always provide a manual method of installing the kernel changes. This resolves all issues by empowering the SysAdmin to install things where required in the local environment.

By all means supply a script but also supply documentation for a manual installation.

2. Solaris is a registered trademark of Sun Microsystems.

ROOT AND /USR

The files in the root and /usr filesystems are sacred, don't write on them unless you ask the SysAdmin first. Again supply a script and documentation of what the software requires. Many SysAdmins centrally control many system files via NIS³ or rdist, and sometimes a combination of both. Changing any files in these areas often must be reverted and the changes moved to a central server.

Configuration files for your software do not belong in root and /usr. Never have a requirement that configuration files, license files, etc. be placed in /etc, for example. Files placed in these directories are lost during upgrades and must be recognised and replaced by the SysAdmin. Place your configuration files in a config directory in your software hierarchy. This is easily managed via environment variables, and much preferred by SysAdmins.

CONFIGURATION

Scripts which set environment variables and form a wrapper around a software product are becoming more and more common. These offer the most flexibility to the SysAdmin as long as you go all the way. Allow EVERY path and aspect of the software to be configured via environment variables. Be prepared to add new environment variables following feedback from SysAdmins. It is impossible to satisfy every variation and situation where your product could be used, however, the attempt will be appreciated.

At Barwon Water, regardless of whether they are supplied by the vendor, we setup wrapper scripts for all third party software. All the wrappers are installed in a directory which is included in all users paths. This means when new software is added to our systems, no changes are required to any user setup. The following is the simple wrapper template used at Barwon Water:

```
#!/bin/sh
#
# Setup environment for a application
#
# Template: /opt/bin/Template

# set the program name

PROG=`basename $0`

# set up any environment

# adjust the path

PATH=/opt/$PROG/bin:$PATH
export PATH

# exec the binary

exec $PROG > /dev/null &
```

All software vendors should consider the possibility that their software may be run in this manner.

3. NIS is a registered trademark of Sun Microsystems.

Other configuration issues:

- Never statically link software, the SysAdmin may have modified some system libraries that the software must use. Domain Name Services library changes for Internet access are an example.
- Allow fully qualified domain names for hosts. Many sites are now connected to the Internet and use fully qualified host names.
- Make use of the setuid and setgid feature to give privileges to flat file databases and sensitive files. Use an unprivileged user account created for the software.
- Don't remove symbol tables from binaries. It will help the vendor and the SysAdmin so much more if core files have meaningful data in them.
- Root access for any program is never given lightly. Ensure that each specific program really needs it.
- Remember that all software SHARES system resources like printers. Never assume that a software product has the run of a machine. In larger environments it never does.
- If a product is tty based it will eventually have to run on a graphical display where the user has access to other tools. Tty emulations on graphical displays also tend to be less functional than real ttys, always program for the lowest common denominator.

LICENSING

The next monster to be overcome after installation and configuration is licensing. License servers are now a part of everyday life on networked Unix environments. I hate them, you hate them but they are here to stay. Things must be improved in this area. Countless bad license codes and international faxes make them a major pain.

- If licensing must be used then license tokens are the best option. It is a user pays system which suits both the vendor and the SysAdmin. When you use all the licenses you buy more.
- Don't write your own licensing software buy a license server package. You might write a better one. However, that is another setup the SysAdmin must understand and manage. Invariably homegrown license servers have more warts than the bought ones.
- A single license server can manage multiple software products from multiple vendors. Eventually SysAdmins should be able to run one or two of the more popular license servers to handle every software product they have.
- Think about running on a couple of the more popular license servers, this would give the SysAdmin a choice.
- Send out license information via electronic mail whenever possible. Fifty character strings of random characters are never fun to type from a blurry fax.
- Don't license software based on the power of a machine. License based on users. Database and Image server vendors are particularly guilty in this area.

Incremental costs as a site grows are easier to manage from a budgeting point of view.

The large cost hike when upgrading from machine "xxx/100" to machine "xxx/1000" means a site will put off the upgrade until it can be afforded. In the meantime the software product runs slowly on a slow server while other products which do not have such arcane restrictions have already been moved to that new fast box. The users lose out and the product looks bad.

STANDARDS

The greater body of computing organisations all over the world are setting and supporting standards in almost every field of computing endeavour. The Unix environment has thrived on and nurtured standards throughout its entire commercial existence. If a standard exists for areas covered by a software product, Unix SysAdmins require conformance.

Standards are the backbone of *Open Systems*. Standards allow a site to obtain a product, use it while it provides the level of functionality required, then upgrade to the newest and shiniest product and bring along all those standard objects with little conversion effort. Products which conform to standards also allow the SysAdmin to obtain software from the Internet which can also manipulate those standard objects.

Open Systems to the SysAdmin means if your software turns out not to be moving in the direction required it can be replaced by one which does from another vendor. This same scenario can be applied to hardware vendors. It gives the SysAdmin options and keeps the vendors on their toes. This may seem like a bad thing from a vendors point of view, but a dynamic, flexible vendor will see it as an opportunity.

- If any area of a product is covered by an Request for Comment (RFC), the product **MUST** conform. RFC's are published and easily obtained, ignorance is no excuse.
- Proprietary standards limit the options of a SysAdmin and reduce the attractiveness of a product.
- Don't reinvent the wheel. If a standard exists use it. Image software vendors and hardware suppliers are notoriously bad in this area.
- Public domain software is available to the software vendor just like it is to the SysAdmin. There is no reason why SysAdmins should be the only ones to benefit from the wealth of software out in the Internet community.

X WINDOWS⁴

Graphical User Interfaces and bitmapped display are now common. Software which exploits these displays requires special attention to ease the load on SysAdmins and on Users (which also has a direct effect on the SysAdmins).

- Play with others, don't be greedy, only take as much of the color map as you really need.
- X modmaps are bad news, they effect every other application a user is running, avoid them at all costs.
- Allow the X11 bin and lib directories to be configured. Many SysAdmins do not install this stuff in /usr.
- The vendor cannot dictate what X environment is setup at a site. Some SysAdmins may not run the hardware vendor supplied X server and setup. This is a perfectly reasonable thing to do.
- Supply X resources for configuration.
- Support all the standard resources for the interface supplied on the hardware and a standard X11 environment.
- Implement an interface consistent with the tools supplied on the hardware and a standard X11 environment.
- Supply context sensitive help for all screen objects.

4. The X Windows System is a trademark of the Massachusetts Institute of Technology.

- Follow published style guides for the GUI. Helps SysAdmins provide a consistent LOOK and FEEL to users. Reduces training and improves the usability of any software package.
- Don't create your own widget library, buy one, or use an interface builder. Again, consistency of LOOK and FEEL is the goal.
- Supply file browser icons and configuration for the software product on the different platforms.
- Graphical tools should supply a method of printing objects without the necessity of displaying a window or connecting to a X11 server.

SUPPORT

Unix lacks depth in the area of technical expertise. Often software vendors have to make do with substandard support personnel. Experienced SysAdmins want highly technical, knowledgeable support people to deal with, but don't expect to get them. There are things vendors can do to improve their support to Unix environments and bridge the gap which is present in many support areas.

- Supply customers with **ACCURATE** product information about future releases, with **ACCURATE** dates. A no brainer!!
- Supply demos free of charge. Set them up so they do not require a license. Supply them over the net if size allows.
- Send out patches via the Internet. Easier and quicker than complete releases.

I would rather install ten patches than one whole new release. If releases are coming too quickly the effort required to constantly reinstall is wasted. If releases come too slowly problems and frustrations build up. Patches solve this problem.

- Ftp (File Transfer Protocol) can be used to allow customers to browse patches, white papers, newsletters or other information. Setting up an ftp server is trivial and it allows customers to grab the information and patches which are relevant to them.
- Use electronic mail to the support the customer base.

Create electronic mailing lists for customers, designers and support people to participate in.

Connect other offices via the Internet to facilitate the sharing of information on how problems are resolved for customers.

Open the lines of communication between local and international distributors and the international supplier.

- Remember that the SysAdmin of a large site probably has more experience and knowledge of Unix than the support staff and before long may know more about the product too.
- Be prepared to support customers who have a security policy which will not allow dial in access. Barwon Water has adopted such a policy. This is not due to mistrust of the support people who would dial-in. It is an issue of what small hole could they have accidentally opened up which some cracker might exploit.

MISCELLANEOUS

CLIENT-SERVER

Unfortunately many software vendors in the Unix market do not understand the client-server model of computing which is the bread and butter of large Unix sites. Expect to find more and more sites where the desktop tty or PC has been replaced by a fully networked, powerful workstation.

A workstation is a powerful machine capable of doing a great deal of useful processing besides just displaying graphics on a screen. It is the client portion of client-server.

- Software is usually distributed to these workstations via the network.
- Software should be setup with this environment in mind. Shared libraries should be used to reduce binary sizes. This improves network load times and reduces memory usage on the client.
- Ensure software works over NFS⁵ i.e. handles any locking required, for flat file databases.

INTEGRATION

Many of the issues and problems already highlighted are integration issues. What follows is just a few extras.

Users want computers to work for them. They want their work on the computer to make sense, to be intuitive. The SysAdmin wants the same thing. These goals are achieved through integration. Integration with other tools, the graphical environment, the printing model, etc.

- Supply conversion software to import and export your data to and from other formats.
- Never assume you know all the ways your software will be used.

THE PC SCOURGE

The Unix market continues to grow and the software vendors must come from somewhere. Fortunately for the Unix market there are a lot of PC developers out there who see the limitations of that environment and make the move into Unix. Unfortunately very few of them learn very much about Unix before diving in boots and all and shipping a product. Programming for PC's is very different to programming for multiuser networked environments, Windows NT will suffer this same fate.

GENERAL HINTS

- Allow for VERY long pathnames and VERY long filenames.
- Allow for all standard Unix file names. Dot as the first character of a filename, more that three characters after a dot, etc.
- Avoid all shell metacharacters in file names.
- Tell the SysAdmins about important information/errors via syslog.

5. NFS is a registered trademark of Sun Microsystems.

SECURITY

Be concerned about security, the SysAdmin of any Internet connected site will be. The Internet which serves the SysAdmin so well also serves the cracker community just as well. See [Bel92]. Security problems with software products must be dealt with quickly. It takes very little time for information about how to break a system which runs software package XXX to be sent all around the world and be in the clutches of thousands of idle fingers with nothing do but surf the Internet for somewhere to break into.

Full connections to the Internet demand that sites consider implementing firewalls and establish security policies for their users, the consultants and software used at that site. SysAdmins at larger sites (and often smaller sites) will not let users, consultants or software have free run of their systems. A description of firewalls and how they achieve their purpose is beyond the scope of this paper. See [Ran92].

If you decided to provide your customers with a Ftp archive of patches and information, ensure you allow passive Ftp. Ftp sets up a separate connection between the ftp client and the ftp server to transfer data. This connection is normally established by the server instead of the client. Firewalls do not allow connections to be made from random external hosts to internal hosts. This problem is resolved by allowing the client to establish the data connection for Ftp. This is called passive Ftp. It is safe for ftp server sites to provide this service because a known protocol will be used on a known port. See RFC 1579 [Bel94].

SUMMARY

As stated previously many of the suggestions above are easy to implement, others are harder, but they are all relevant to running Unix sites where many different functions are performed on the hardware.

SysAdmins all over, would be pleased if software vendors found any of the above useful enough to implement in their products. They would appreciate the effort and so would I.

Finally to the title of my talk.

To the uninitiated vendor or consultant the first experience with a site which starts dictating what they can and cannot do is very disconcerting. Many vendors believe that the SysAdmin is being obstructive, they are not. They are protecting and maintaining a huge investment in time and effort spent to set up an integrated complex computer network running many varied and different products. So ...

Don't ask because I won't give it to you!

REFERENCES

- [Bel92] Steven M. Bellovin. *There Be Dragons*, August 1993. Proceedings of the Third Usenix UNIX Security Symposium.
- [Bel94] Steven M. Bellovin. *Firewall-Friendly FTP*, RFC 1579.
- [Lyn93] Daniel C. Lynch & Marshall T. Rose. *Internet System Handbook*, Addison-Wesley 1993.
- [Ran92] Marcus J. Ranum. *Thinking About Firewalls*. Trusted Information Systems (TIS) Firewall Toolkit, 1992.

AUUG 1994[†]

Melbourne, 7 - 9 September 1994

Open Systems Architectural Deployment

- ◆ Convergence & Accelerating Technological Change
- ◆ Roles of Industry Consortia
- ◆ Architectural Frameworks
- ◆ Standards in Real Life
 - Network Management & Databases
- ◆ Broadband Services - an Australian Perspective

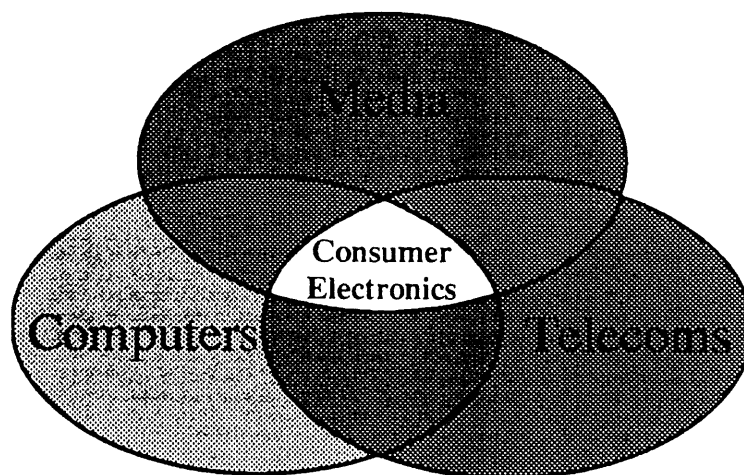
Geoff McClelland
Director, Centre For Open Systems

© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 1.

Convergence - New Markets, New Opportunities



© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 2

[†] This paper was presented at AUUG94, but was not published in the proceedings of the Conference.

Cumulative Impacts of I.T. Hardware Advances

1987 to 2000 - Overall System Improvement

- ◆ Cost reduction: factor of 145
- ◆ Capacity increase: factor of 90
- ◆ Reliability improvement: factor of 2 to 225
- ◆ Performance improvement: factor of 56
- ◆ Size reduction: factor of 250

Source: Al Cutais, *Technology Projection Modeling of Future Computer Systems*, Yourdon Press/Prentice Hall, 1990.

© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 3.

Accelerating Technological Change - Impacts

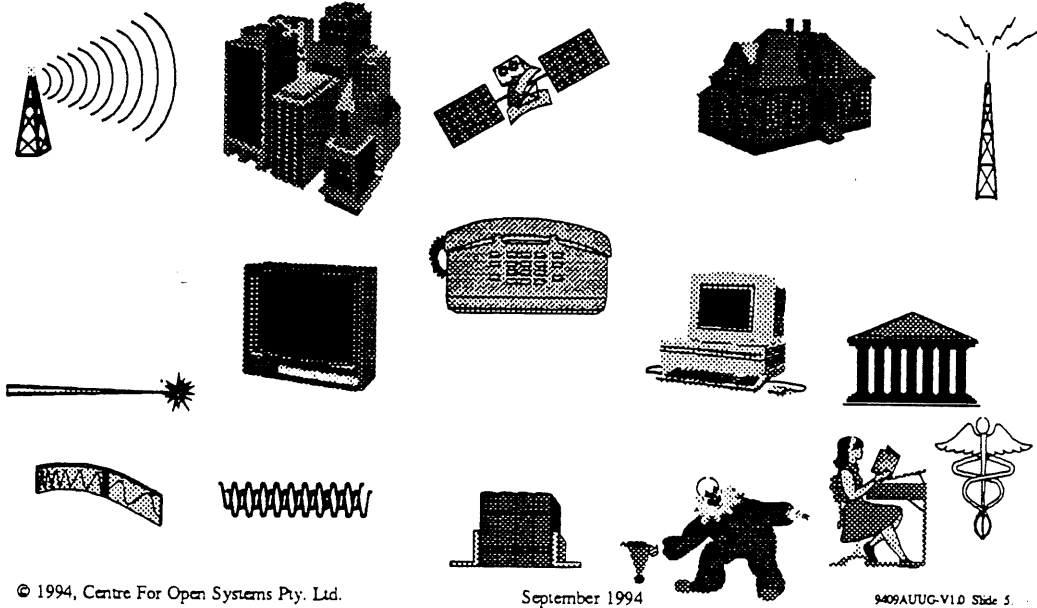
- ◆ Ubiquitous Information Technology & Telecommunications
- ◆ Virtual Corporation
- ◆ Health, Education, Legal
- ◆ Mass Media, Retailing, Advertising
- ◆ Government Services

© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 4

Technologies and Services



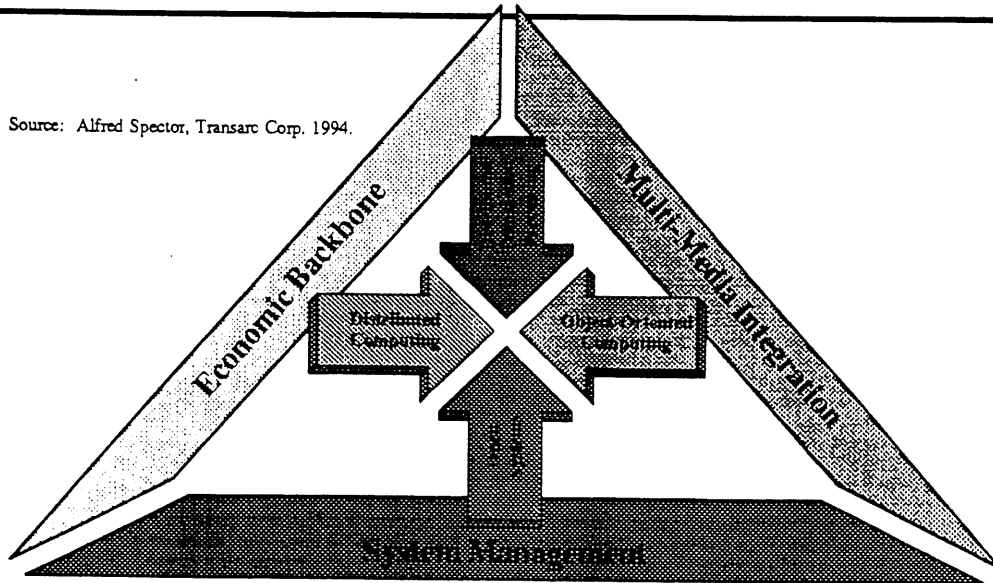
© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 5

The New Paradigm

Source: Alfred Spector, Transarc Corp. 1994.



© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 6

X/Open Company Ltd.

- ◆ Established in 1984 by 5 European H/W suppliers
- ◆ Not-for-profit, open systems “standards integrator”
- ◆ Worldwide; offices in UK, USA (2) and Tokyo
- ◆ Membership now comprises the major H/W & S/W suppliers and over 100 large scale users
- ◆ Mission: To bring value to users through the practical implementation of open systems.

X/Open Deliverables

- ◆ X/Open Portability Guide (XPG4)
- ◆ Xtra - Market Requirements Process
- ◆ XPG Verification and “Branding” process

Open Software Foundation (OSF)

- ◆ Established in 1988
- ◆ Not-for-profit, Software Research & Development organisation
- ◆ Originally sponsored by IBM, HP, DEC, Hitachi
- ◆ Worldwide; offices in Boston, Brussels and Tokyo
- ◆ Industry-funded; over 400 members
 - » System Vendors System Integrators
 - » Software Houses Research & University
 - » End Users

© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 9.

OSF - A New Organisation

- ◆ 23 March 1994 - the day the industry unified
 - OSF and UI processes combined
 - Open Process; 'cose' development model merged
- ◆ Strengthened international membership organisation
- ◆ Same mission: vendor-neutral, interoperable technologies
- ◆ OSF's Sponsors: AT&T, Bull, Digital, Fujitsu, Hewlett-Packard, Hitachi, IBM, ICL, Novell, NEC, Silicon Graphics, Siemens Nixdorf, Sony, Sun & Transarc

© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 10

OSF Deliverables

- ◆ Source Code with Reference Implementations
- ◆ Specification
- ◆ Validation Test Suites
- ◆ Technology Transfer Services

© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 11.

Technology Transfer

- ◆ Information (Membership) services
- ◆ Technical Education
- ◆ Professional Services
- ◆ Contract Engineering
- ◆ Architecture Evaluations
- ◆ Migration/Transition planning
- ◆ Implementation planning
- ◆ Systems Management planning
- ◆ Security planning and implementation

© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 12

Other Consortia

- ◆ Object Management Group (OMG)
- ◆ SQL Access Group (SAG)
- ◆ Network Management Forum (NMF)
- ◆ Desktop Management Task Force (DMTF)
- ◆ X.400 API Association (XAPIA)
- ◆ ATM & Frame Relay (FR) Forums

Architectural Frameworks

- ◆ Major users worldwide are re-defining their IT&T infrastructure as a series of technology frameworks within an overall architectural model, e.g.:
 - Electricity Generation Industry - Utility Communications Architecture (UCA)
 - Telecommunications Industry - Telecommunications Information Networking Architecture (TINA)
 - The aviation and petrochemical industries
 - Nippon Telegraph and Telephone Corporation (NTT) Multivendor Integration Architecture (MIA)
 - European Commission - European Procurement Handbook for Open Systems (EPHOS)
 - U.S. Government's National Institute of Standards and Technology (NIST) Application Portability Profile (APP)
 - Australian Government - Aust'n Government Guide to Open Systems (AGGOS)
- ◆ A 'standards' based approach to IT&T

Australian Government Guide to Open Systems

- ◆ Prepared by Commonwealth Government's Open Systems Sub-Committee (OSSC) and released in June 1993.
- ◆ Process is a good example of IT industry and Government co-operation
 - Australian Information Industry Association (AIIA) co-ordinated active involvement of over 20 industry experts from 15 indigenous and multi-national companies
 - Significant learning experience for both Government and Industry
- ◆ Maps out a common language and framework for a very complex subject

© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 15.

AGGOS: A Comprehensive Guide to Open Systems

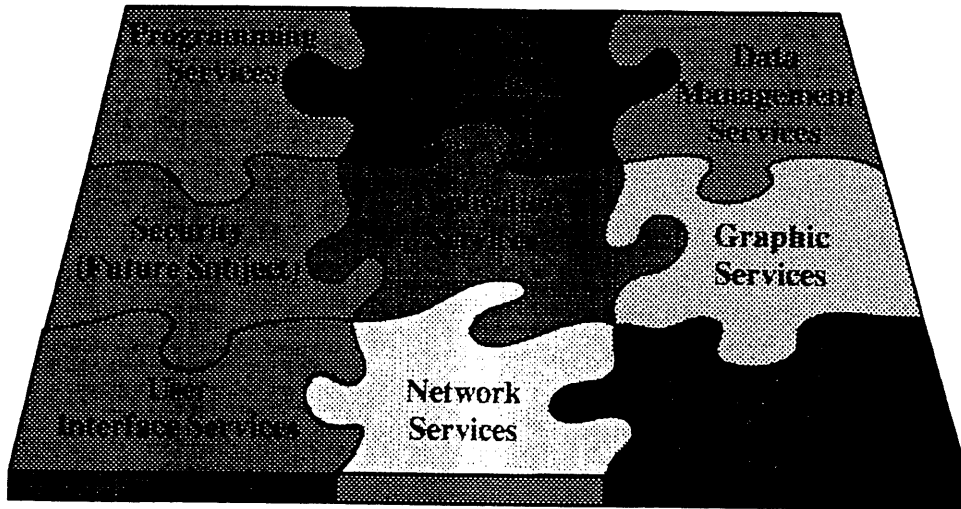
- ◆ Allows whole subject to be better understood by Government and industry
 - Provides a cohesive view of the numerous open systems initiatives occurring world-wide
 - Details a standards based approach to IT&T which has the capability to bring significant cost saving and information sharing within Government and Australian industry
 - Cost effective, phased transition under agency control and in accordance with agency's business requirements is the goal
 - Evolutionary rather than revolutionary change
- ◆ Based on US Government's National Institute of Standards and Technology (NIST) Application Portability Profile (APP)

© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 16

US Government NIST's APP

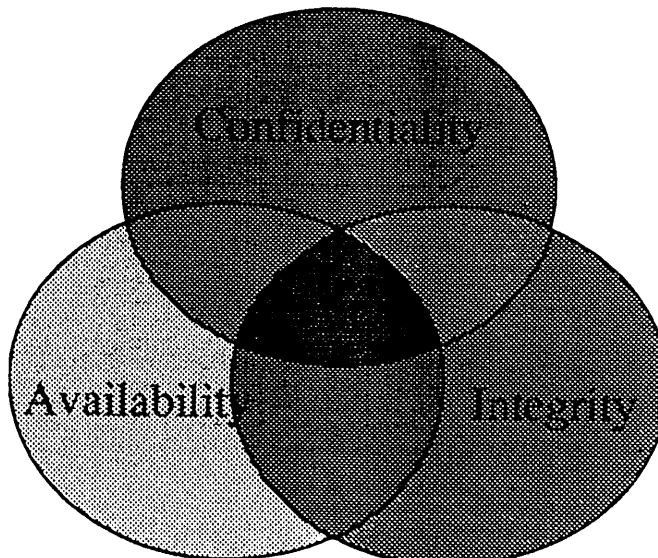


© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 17.

Information Security

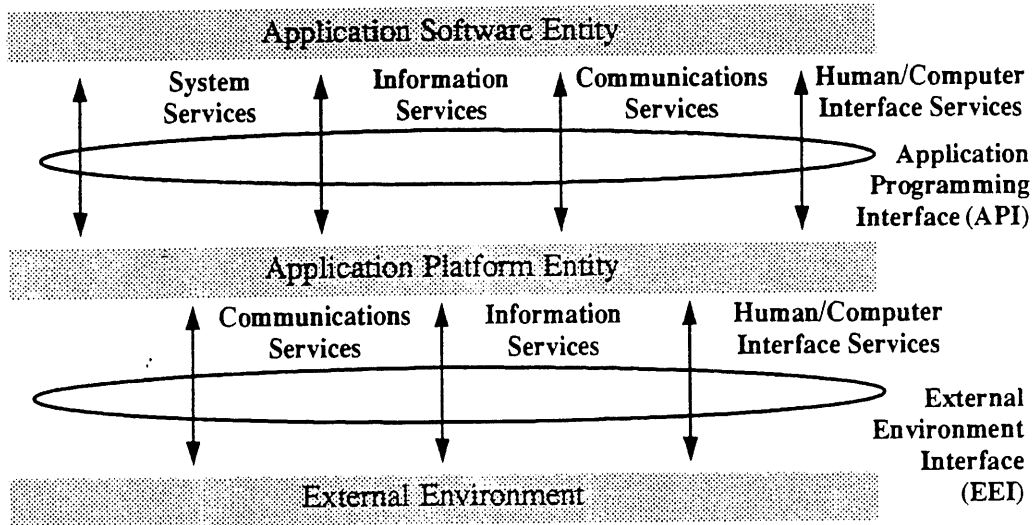


© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 18

IEEE POSIX Reference Model Interfaces



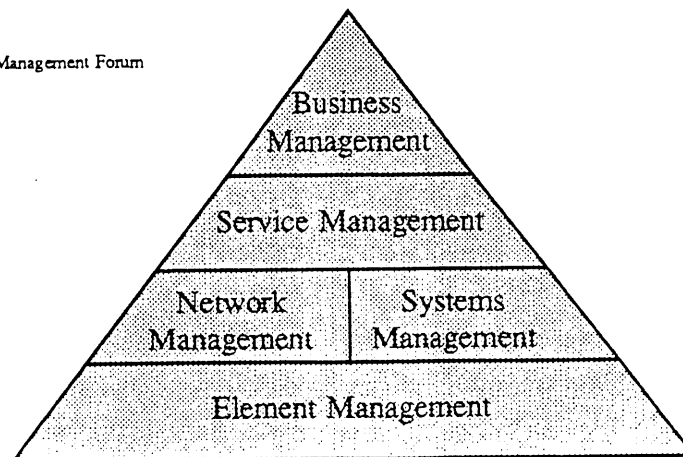
© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 19.

A Management Model

Source: Network Management Forum

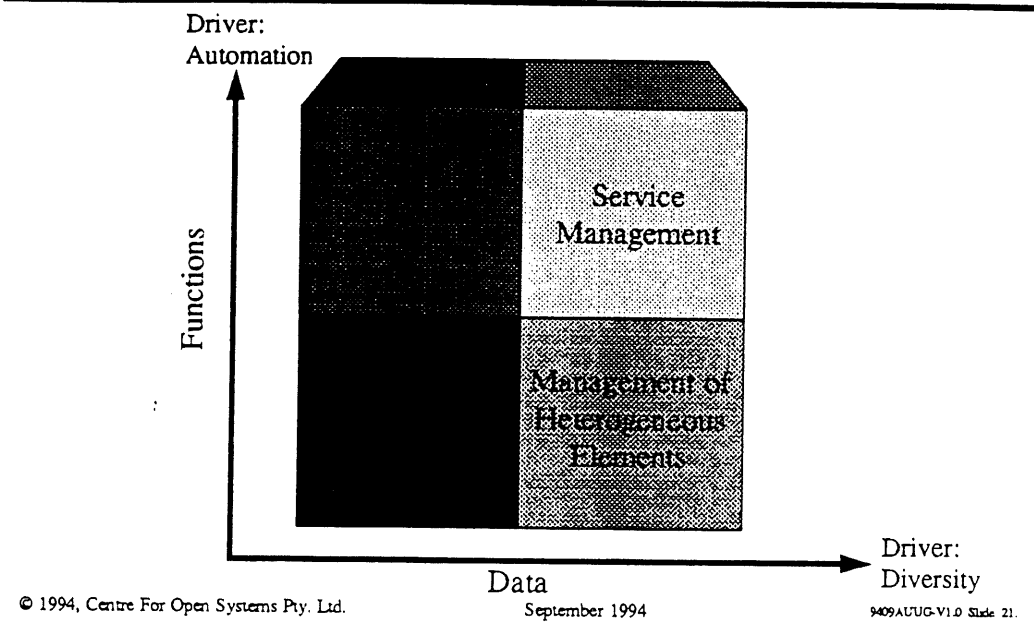


© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 20

Network Management Quadrants



OMNIPoint 0

<p>Functional Elements: Alarm Reporting and Logging Event Management Configuration Management (basic) Testing Management Scheduling Management Object Definitions (for a basic set of components)</p>	<p>Infrastructural Elements: Manager-Agent Architecture Management Protocol and Services (CMIP/CMIS) Common Services (Shared Management Knowledge and Naming) Guidelines for the Definition of Managed Objects (GDMO Template) General Management Services (event, State, alarm management) Conformance Testing Methods and Tools</p>
--	--

© 1994, Centre For Open Systems Pty. Ltd.

September: 1994

9409AUUG-V1.0 Slide 22

OMNIPoint 1

1992-4

Implementation Guidance:	Functional Elements Added:	Infrastructural Elements Added:
Statement of User Requirements Guidebook <i>Discovering OMNIPoint</i> Implementing TMN with OMNIPoint Product catalogue	Trouble Tracking Trouble Resolution Routine Maintenance Path Tracing Security Alarm Reporting Security and Audit Trail Reporting Reconfigurable Circuit Ensembles (Alarm Surveillance and Configuration)	Strategy and Specifications for SNMP/CMIP Interworking Object Library and Registration Services Application Programming Interface (API) for Communications Protocols Testing Strategy, Methods and Procedures Migration to Draft International Standardised Profiles

© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 23

OMNIPoint 2

1994-6

Implementation Guidance:	Functional Elements:	Infrastructural Elements:
SPIRIT Platform Specification for Service Providers Detailed Design Requirements TMN Product Implementation Manual	Service Level Agreement Management Change Management LAN Management OSI Transport Layer Management Synchronous Digital Hierarchy (SDH) Management Asynchronous Transfer Mode (ATM) Management Customer Administration Management Bandwidth Management Leased Line Management	Distributed Systems Management Services Desktop Management Interface (DMI) Performance and Accounting Management Services CORBA/DME/OSI Object Model Integration, mapping Specifications and Algorithms Object Oriented API for Systems Management Management User Interface API Legacy Application Interface RPC Communications Profile

© 1994, Centre For Open Systems Pty. Ltd.

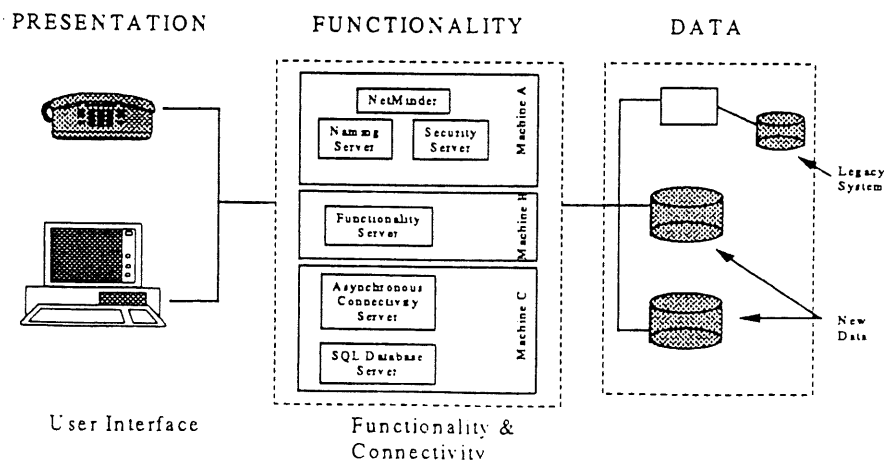
September 1994

9409AUUG-V1.0 Slide 24

<p>Implementation Guidance: Modular procurement development packages Additional TMN Implementation Manuals</p>	<p>Functional Elements: Planning and Design Accounting Service Ordering Billing and Chargeback</p>	<p>Infrastructural Elements: Service Management Architecture APIs for database access Fully developed "branding" programs for product assurance Protocol selection for large-file transfer applications</p>
--	---	--

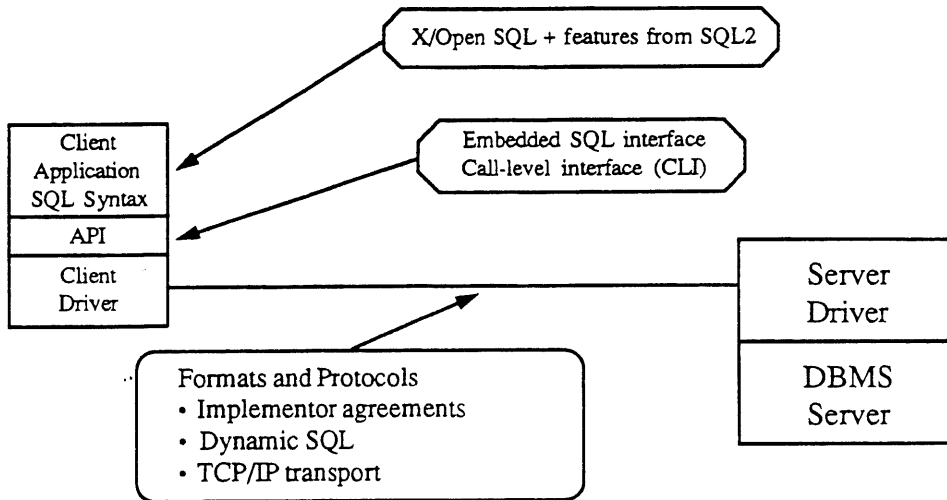
3 Tiered Client/Server Architecture

3-Tiered Client-Server Architecture



Donovan, J., *Business Re-engineering with Information Technology*, PTR Prentice Hall, NJ, 1994, pp 79-80.

Database Gateways - SQL Access Group



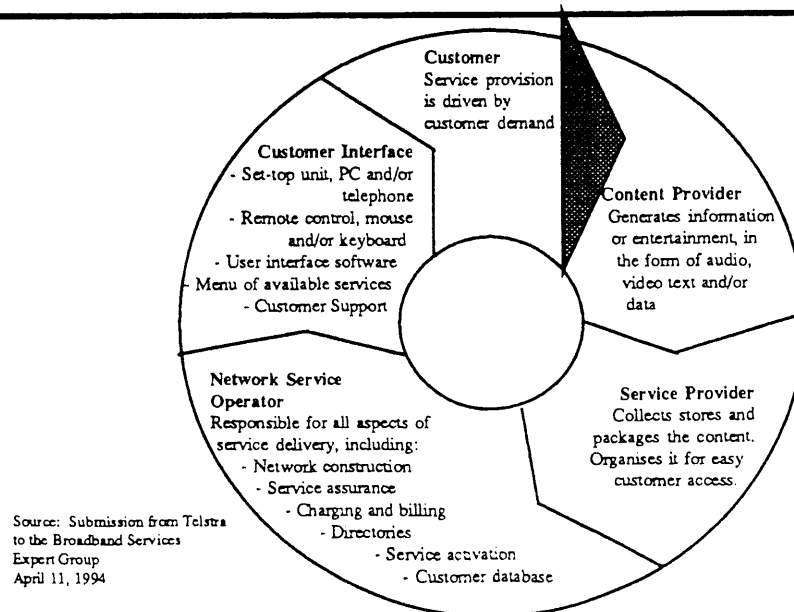
Source: Colin J. White 'DataBase Gateways: The Impact of New Standards', OLTIP Handbook edited by Gary McClain, McGraw-Hill, 1993, p.266.

© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 27

The Service Delivery Chain



Source: Submission from Telstra to the Broadband Services Expert Group April 11, 1994

© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 28

Social Goals for the Development of Broadband Services

- ◆ It should enhance a sense of community.
- ◆ The goal should be to use information to enhance citizens' access and choices, and opportunities for business.
- ◆ There should be recognition of issues related to information management.
- ◆ The network should be designed so as to enhance individuals' control over uses of information about themselves [privacy].
- ◆ People should be provided with skills to use the services.
- ◆ Network should be used to enhance participation in democratic processes.

Source: Broadband Services Expert Group, Brainstorming Session Report - Social Impact of Broadband Services, March 1994

© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 29

Social Goals for the Development of Broadband Services

- ◆ It should provide for stimulation of Australian creativity.
- ◆ A guiding principle should be involving community in identification of needs and appropriate technologies. Recognition that different levels of technology may be needed in different contexts. Focus on applications and user groups, and recognise that development will be evolutionary.
- ◆ Goal should be to develop and market specific Australian capabilities in applications - export potential.
- ◆ Goal to drive economic growth and development, and thereby underpin our standard of living.
- ◆ Develop a world-competitive education system.
- ◆ Diversity and flexibility should be watchwords.

Source: Broadband Services Expert Group, Brainstorming Session Report - Social Impact of Broadband Services, March 1994

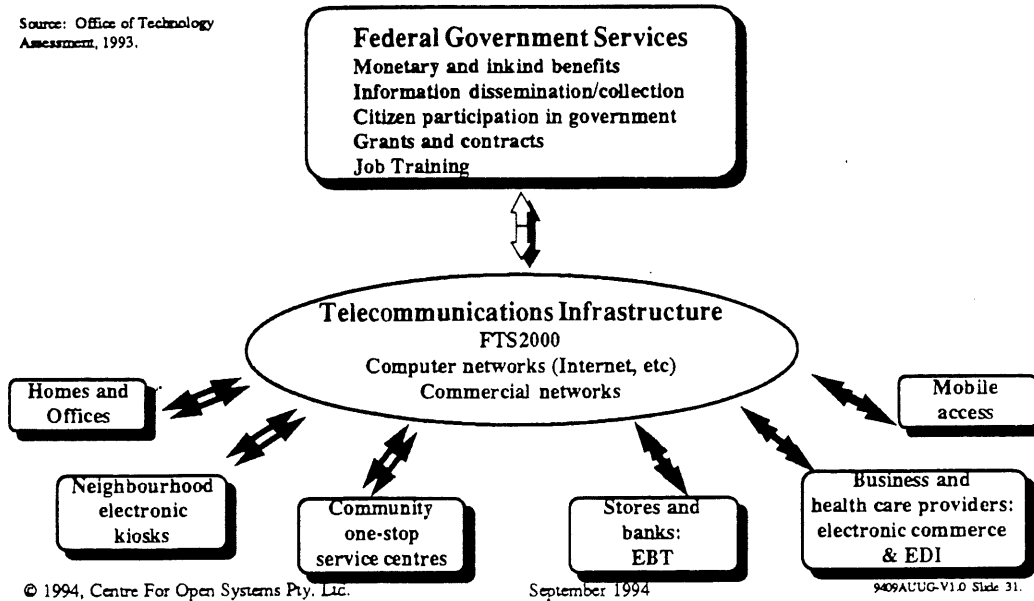
© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 30

US Government Service Delivery

Source: Office of Technology Assessment, 1993.



AUUG 1994

Melbourne, 7 - 9 September 1994

Open Systems Architectural Deployment

- ◆ Convergence & Accelerating Technological Change
- ◆ Roles of Industry Consortia
- ◆ Architectural Frameworks
- ◆ Standards in Real Life
 - Network Management & Databases
- ◆ Broadband Services - an Australian Perspective

Geoff McClelland
Director, Centre For Open Systems

© 1994, Centre For Open Systems Pty. Ltd.

September 1994

9409AUUG-V1.0 Slide 32

Getting Performance Data From UNIX¹

David Purdue

Knowledge Distributed Systems Pty Ltd
Level 4, 153 Walker St, North Sydney, NSW, 2060
Phone: (02) 955 0777; Fax: (02) 956 6442
<davidp@knowledge.com.au>

ABSTRACT

UNIX has a reputation, especially among mainframe fanatics, of not allowing easy access to performance related information, such as how much of certain resources (e.g. cpu or memory) are being used. In fact there are a number of standard UNIX commands that will report this information. This paper examines some of these commands, and briefly discusses two tools, Patrol and SAS/CPE, that aid in making sense of their results.

1. Introduction

The goal of performance management and capacity planning is to ensure that a computer system is capable of processing the workload offered to it.^[CADY90, p.2] An important part of the performance management process is measurement - determining just how much of the machine's limited resources are being used.^[HOWA94] These resources include CPU time, memory, disk space and i/o bandwidth.

UNIX² has a reputation of not yielding this information up easily.^[LOUK92] In fact, there are a number of standard, user level commands that can be used to find the performance data needed. In this paper I will examine a selection of them, looking at what their output means, and then highlight two tools that can be used for analysing the results of these commands.

1.1. Examples In The Text

"The wonderful thing about standards is that there are so many of them to choose from."

The majority of the examples in this paper come from SunOS, which is based on BSD UNIX; mainly because the machine on the author's desk runs SunOS, and so documentation and example output were readily available.^[SUNM90]

All UNIX versions have commands that yield the same information, but they may have different names or take different arguments. For example, in System V, the `sar` command gives the same information as most of the commands I will list here, and Solaris 2 has both `sar` and the commands shown here.

2. Where Is This Information?

As indicated above, performance information can be gleaned from the system by user level processes. This is possible because of UNIX's open approach that allows user level processes to access kernel data structures. In these structures can be found counters, timers and tables which the kernel maintains to show resource usage. The interface to this data is through two files:

¹ This paper is based on a talk presented to the Computer Management Group, 10 August 1994.

² UNIX is a registered trademark in the United States and other countries, licenced exclusively through X/Open Company Limited.

/vmunix This is the image of the kernel executable, and in general is readable by everyone. By examining the symbol table stored in this file it is possible to work out the location in memory of the kernel's various counters and tables.

/dev/kmem This is an interface to a device driver that allows user level processes to treat the kernel's memory space as a file. Using file operations, programs can read the from the locations discovered in /vmunix. Of course, there can be items in the kernel's memory space that should not be read by arbitrary users, for example unencrypted passwords, so access to this file is usually restricted to the **kmem** group. UNIX's set-gid facility can be used to grant kmem privilege to particular programs, so that any user running that program can see just those kernel data structures the program reveals.

Some versions of UNIX support the **/proc** file system. This is a virtual file system that allows efficient access to kernel data structures. In System V Release 4, there is one file in /proc for each running process. The Linux /proc goes further, with a directory for each process with files in /proc and in the subdirectories containing various items of system information.

The point, to reiterate, is that performance data can be gleaned by user programs without the need for kernel modifications. The system manager is free to install or even write programs that process this data and present it in more agreeable forms.

3. ps - The Microscope

The **ps** command lists the processes active within the system, along with information such as how much CPU and memory each process is using. A sample output is shown in figure 1.

```

% ps -augx
USER      PID  %CPU  %MEM    SZ   RSS  TT  STAT  START   TIME  COMMAND
davidp    3362  15.4   1.6   228   476 p4  R    11:55   0:00  ps -augx
oracle    3350   2.6   9.5   292  2912 ?   S    11:55   0:00  oracle
root       2     0.0   0.0    0     0 ?   D    Aug  6   0:00  pagedaemon
root      144   0.0   0.0    12     8 ?   D    Aug  6  11:06  update
root      147   0.0   0.0    56     0 ?   IW   Aug  6   0:02  cron
oracle    3354   0.0   4.3   164  1320 ?   S    11:55   0:00  ora_pmon
oracle    3355   0.0   4.5   160  1388 ?   S    11:55   0:00  ora_dbwr
oracle    3356   0.0   4.6   160  1412 ?   D    11:55   0:00  ora_lgwr
oracle    3357   0.0   4.0   156  1236 ?   S    11:55   0:00  ora_smon
oracle    3358   0.0   4.1   160  1264 ?   S    11:55   0:00  ora_reco
oracle    3359   0.0   4.0   160  1236 ?   S    11:55   0:00  ora_s000
oracle    3360   0.0   5.2   204  1588 ?   S    11:55   0:00  ora_d000
root       0     0.0   0.0    0     0 ?   D    Aug  6   0:02  swapper

```

Figure 1 - ps sample output

The information shown for each process is:

- USER** The user ID of the owner of the process.
- PID** The Process IDentifier, used to refer to a particular process in other commands.
- %CPU** How much of the available CPU this process is using.³
- %MEM** How much of the available real memory this process is using.

³ According to the manual, this is a "decaying average over up to a minute of previous (real) time." i.e. the calculation can be on a different basis for different processes, so this column can add up to over 100%. Treat the figure as an estimate - a process using 59% is getting more CPU than one showing 12%.

SZ	The combined size of the stack and data segments, the dynamically changing parts of the process's memory allocation.
RSS	The Resident Set Size, or how much real memory (in kilobytes) the process is using.
TT	The terminal the process is attached to, if any.
STAT	The status of the process. R = running, S = sleeping for less than 20 seconds, IW = sleeping for more than 20 seconds and swapped out, etc.
START	When the process started. This is a time if it started today, otherwise a date.
TIME	The CPU time used so far by the process.
COMMAND	The name and arguments of the program the process is running.

Note that the SunOS version of `ps` lists processes in descending order of %CPU. Other versions do not sort their output like this. This ordering highlights `ps`'s greatest problem. As you can see in the sample output, `ps` is very expensive to run, which can be a problem in a fire-fighting situation. If performance is particularly poor, you may want to use `ps` to find out what is happening on the system. But if resources are tight, it may take an inordinate amount of time just to run `ps` - assuming there is a free process slot to start it in.

The `/proc` virtual file system noted above can make `ps` cheaper to run, as it becomes just a matter of listing the contents of certain files.

For systems that require processes to be listed in decreasing order of CPU usage - and generally the processes that use more CPU are the interesting ones - there exists a free program called `top`⁴ that does that, and claims to be inexpensive to run.

4. `df` - Disk Usage

Q. How much disk does my system need?

A. More.

It is important to keep track of disk usage to ensure that applications do not fail because they cannot write to disk.⁵ `df` reports how much of each disk partition is being used, and a sample output is shown in figure 2. Note that for the file systems on disk devices, `used` and `avail` add up to less than `kbytes`, the total disk capacity. This is because the file system keeps some space in reserve for performance reasons. This is not the case for the `swap` file system. The field to keep an eye on to avoid trouble is `capacity`, a simple percentage measure of how full the file system is.

% <code>df</code>						
Filesystem	kbytes	used	avail	capacity	Mounted on	
/dev/sd0a	15127	5800	7815	43%	/	
/dev/sd0g	403062	294735	68021	81%	/usr	
/dev/sd1a	481823	306015	127626	71%	/usr/oracle	
/dev/sd1d	442935	326009	72633	82%	/var/spool/news	
/dev/sd1g	19183	902	16363	5%	/var	
/dev/sd1h	19183	338	16927	2%	/var/spool	
swap	46220	0	46220	0%	/tmp	

Figure 2 - `df` sample output

⁴ Written by William LeFebvre. <ftp://ftp.jcu.edu.au/pub/ultrix/top-3.2.tar.gz>

⁵ This is especially important with database management system log files, since DBMS failure recovery mechanisms rely on the integrity of the log file.

5. pstat - Kernel Tables

`pstat`, when invoked with different arguments, will display the contents of certain system tables. In the example output in figure 3 `pstat` is being used to show how many slots in four system tables are being used. Figures to the right of the slash are the size of the tables, to the left is amount in use. `files` represents the kernel file table. If it fills up, you will not be able to open any more files. `inodes` is the inode cache. If it fills, system performance will suffer. `processes` is the number of process table slots. If the process table fills, the `fork()` system call will fail, and no more programs will be started until some that are running exit. `swap` is the amount of swap space (in kilobytes). If swap space fills the system will panic (as many Linux users know).

```
% pstat -T
216/1452 files
538/786 inodes
 60/394 processes
18504/65516 swap
```

Figure 3 - pstat sample output

6. iostat - I/O performance

`iostat` reports on terminal and disk i/o performance and CPU utilisation. It produces a stream of data, each line giving information for performance over the last sample interval; the sample interval is an argument to `iostat`. I will illustrate two forms of this command.

The first form, shown in figure 4, has columns for terminal i/o, disk i/o for each disk on the system, and CPU usage. `tin` and `tout` represent the number of characters per second read from and written to terminals. For each disk, `bps` represents the number of kilobytes transferred per second, `tps` is the number of transfers per second, and `msps` is the average seek time in milliseconds. For the CPU, `iostat` shows the percentage of the sample period spent executing user programs (`us`), spent on processes that have voluntarily lowered their priority (i.e. are running *niced*, `ni`), spent executing kernel (or system) code (`sy`), and spent idle (`id`).

```
% iostat 5
      tty          sd0          sd1          cpu
 tin tout bps tps mspms  bps tps mspms  us ni sy id
  10   7   0   0  0.0    0   0  0.0    0  0  0 99
   2  141 116   7  0.0    0   0  0.0   11  0 10 78
   1  110  79  11  0.0   13   2  0.0    3  0  6 91
  128   9   0   0  0.0    0   0  0.0    0  0  1 99
1228 6711   1   0  0.0   39   6  0.0   50  0  8 42
1693 4906   0   0  0.0   13   1  0.0   33  0  4 62
1241 4120   2   0  0.0   19   5  0.0   35  0 10 55
   1  180 180  27  0.0  201  41  0.0   18  0 34 48
```

Figure 4 - iostat sample output

In figure 5 the `-D` flag was used to get the alternate report for disk i/o. This form presents number of reads per second (`rps`), number of writes per second (`wps`), and percentage of disk bandwidth used (`util`).

```

% iostat -D 5
          sd0          sd1
rps wps util  rps wps util
  1   9 21.8   22  1 32.1
  5   1 14.4   33  0 44.9
  1   0  0.6    1  0  2.0
  4   0  6.6    1  0  1.4
  2   7 18.4   23  3 36.1
  1   1  5.4   12  1 19.2
  0   3  7.0   31 21 68.3
  2   3  9.6   22  4 37.1
  2   7 18.2    3  6 11.6

```

Figure 5 - iostat -D sample output

7. vmstat - Memory Performance

The `vmstat` command will tell you more about the performance of the virtual memory system than you care to know, and a full discussion of how to interpret its results is beyond the scope of this paper.⁶ Sample output appears in figure 6. Note that there is some overlap between the information provided by `vmstat` and `iostat`.

```

% vmstat -S 5
procs          memory          page          disk          faults          cpu
r  b  w    avm   fre  si so  pi  po  fr  de  sr s0 s1 d2 d3  in  sy  cs  us  sy  id
0  1  0      0  452   5  0  36  84  76   0  30 12  0  0  0 143 535 123 30 17 52
1  0  0      0  340   0  0 144  72 232   0 191  2 25  0  0 120 660 135 15  8 77
0  0  0      0  276   0  0 208  40 256   0 136  3 30  0  0 113 446 128  3  6 91
0  0  0      0  480   0  0   4   0  12   0   5  0  0  0  0  25 317  80  3  1 96
0  0  0      0  316  20  0  56  28 112   0  41  3  2  0  0  75 410  99  5 13 82
0  1  0      0  264   0  0 256 104 300   0 112  2 30  0  0  98 433 122  5 14 82
0  2  0      0  360  32  0 232 120 248   0  92 19 65  0  0 255 666 168 11 29 61
1  0  0      0  380   5  0 188 132 216   0  60  3 25  0  0 148 450 139 62  7 31
0  0  0      0  372   5  0 168 160 224   0  94  4 17  0  0  94 431 132 48 11 41

```

Figure 6 - vmstat sample output

The `procs` columns report the number of processes in various states: runnable (`r`), blocked waiting for fast i/o (i.e. not a user at a terminal, `b`), and runnable but swapped out (`w`). Any non-zero value in the `w` column could indicate a memory shortage.

The `memory` columns shows the amount of active virtual memory (`avm`, always 0 in SunOS), and the amount of real memory free.

The `page` columns show paging and swapping activity. `si` and `so` are swap ins and swap outs per second, similarly `pi` and `po` show paging. The next three columns show the operation of the page scanner, the part of the kernel responsible for freeing unused memory. `fr` is the rate at which pages are being freed, `de` is the anticipated short term memory deficit in kilobytes, and `sr` is the number of pages scanned per second, i.e. a measure of how busily the scanner is looking for pages. Even systems with lots of memory will see swap ins, as that is how new processes are loaded into memory, and page ins and page outs, as all

⁶ Refer to [LOUK92] or [COCK93].

file system i/o is done through the paging process.^[COCK93, p.18] But a high number of swap outs, or the scan rate running continuously high (several hundred pages per second) can indicate a memory shortage.

The next four columns show number of disk operations per second for up to four disks. `iostat` gives a better report if you are interested in disk bandwidth.

The `faults` columns show the number of interrupts (`in`), system calls (`sy`) and context switches (`cs`) per second. A continuously high rate of interrupts could explain why performance seems poor. For example, most UNIX systems do not have a front end processor to handle terminal i/o, so a faulty terminal connector could generate many spurious characters, each one causing an interrupt that the kernel needs to service.

The last three columns show CPU usage, as for `iostat` with the `ni` column merged into the `us` column.

8. mpstat - Multiprocessors

On a multiprocessor system, the `mpstat` command shows how much work each cpu is doing, so that you may see how well the load is balanced. Sample output appears in figure 7, and the columns are the same as for the `iostat` CPU reporting.

```

% mpstat 5
average      cpu0      cpu2
us ni sy id  us ni sy id  us ni sy id
 5  0 23 71   6  0 24 70   5  0 22 73
 7  0 47 46   0  0  8 92  14  0 86  0
 8  0 43 50   3  0 20 77  12  0 65 22
12  0 45 44  20  0 78  2   4  0 11 85
 5  0 50 45   8  0 92  0   2  0  8 90
 3  0 29 68   6  0 57 37   0  0  1 99

```

Figure 7 - mpstat sample output

9. Process Accounting

When process accounting is turned on, a record is written to a system wide accounting file when each process terminates, describing the resources used by that process. The information includes: the name of the command the process ran, the user who owned the process, the amount of user and system CPU time used, the elapsed real time, the average amount of memory used, and the amount of i/o performed.^[LEFF89] While UNIX does not provide a fully featured integrated chargeback mechanism, the `sa` program can be used to generate reports showing which users or programs use the most resources.

Figure 8 shows a section of the nightly report prepared by the SunOS `runacct` script showing command executions for the day. The commands are listed in decreasing order of `TOTAL KCOREMIN`, which is, in theory, the integral of real memory usage with respect to amount of time spent in the CPU, but is actually worked out by multiplying the total CPU time and average memory usage. This is a good measure of the load the program places on the central core of the machine (CPU & memory).

Other columns in the report are the name of the command, the number of times it was invoked, The total CPU time it used in minutes, the total real time invocations of the command spent running, the average memory usage during runs of the command, and average CPU usage for each invocation of the command. The **HOG FACTOR** is a rough measure of how CPU bound the program is; it is the CPU time divided by the real time. **CHARS TRNSFD** represents i/o to character devices, and **BLOCKS READ** measures the file system i/o.

UNIX system accounting is not perfect, for example if a process does not terminate during the accounting period it will not write an accounting record and so not show up. Also, process accounting does not distinguish between two programs with the same name.

Aug 4 02:00 1994 DAILY COMMAND SUMMARY Page 1									
COMMAND NUMBER		TOTAL	TOTAL	TOTAL	MEAN	MEAN	HOG	CHARS	BLOCKS
NAME	CMDS	KCOREMIN	CPU-MIN	REAL-MIN	SIZE-K	CPU-MIN	FACTOR	TRNSFD	READ
TOTALS	2749	54441.29	21.00	33136.54	2592.44	0.01	0.00	264787888	29397
xnews	2	46312.11	10.87	1484.12	4260.65	5.43	0.01	57806846	282
mailtool	2	2507.45	1.35	1482.52	1861.58	0.67	0.00	6302208	883
find	4	903.18	1.60	3.18	565.66	0.40	0.50	3284	5149
filemgr	2	659.91	0.23	1482.68	2879.61	0.11	0.00	1571840	251
popper	676	655.74	1.52	7.34	432.36	0.00	0.21	3122641	6914
nn	7	451.00	0.40	179.08	1132.23	0.06	0.00	6318528	1154
xterm	5	314.13	0.24	469.87	1308.89	0.05	0.00	1398264	77
clock	2	234.50	0.18	1482.65	1319.05	0.09	0.00	6233088	5
sendmail	95	221.42	0.39	1.11	564.13	0.00	0.35	2681237	900

Figure 8 - Part of the runacct daily report

10. Tools

Dick Smith decided he was going to balloon across Australia. So he climbed into his balloon, fired up the gas and was away. Just then, an almighty thunderstorm arose. Poor Dick was thrown about, and could do nothing but hide in the bottom of his basket and wait. By the time the storm passed, he had no idea where he was, but he saw, on a country road, a lone bicyclist. He brought the balloon down by the cyclist and asked, "Could you please tell me where I am?" The cyclist replied, "You are in a basket about two metres below a hot air balloon." Dick Smith said, "You're a mathematician, aren't you?" "How could you tell?" responded the surprised mathematician. "Because what you told me was perfectly accurate, perfectly true, and perfectly useless."

Actually, mathematics was only my second major.

What this paper has shown so far is several methods to generate a lot of numbers from your UNIX box. What is needed is tools for managing these outputs, making sense of them, and responding to them when necessary. Here is a brief taxonomy of some of the available tools.

10.1. Patrol

The above commands are very useful for finding which resources are scarce if a performance problem occurs. However, you would have to run them all the time and watch their output if you wanted to be informed about resource shortages before they become performance problems. The rationale of Patrol is that you probably have better things to do.

Patrol, from BMC Software, runs these data collection commands on behalf of the system administrator, and filters the output to extract the values the administrator is interested in. Patrol will alert the administrator if these values fall outside administrator defined bounds, and can be configured to execute programs to correct the situation.

10.2. SAS/CPE

SAS/CPE gathers data from the accounting system, network management tools, or user-defined sources (such as the commands shown here). This daily data is stored in a performance database, and can be collapsed down to weekly, monthly and annual summaries in a user defined manner.

SAS/CPE provides the functionality of the SAS statistics package and report generation tools for analysing the performance data collected. This information can be used in capacity planning.

10.3. Other Tools

Hewlett Packard have a range of tools: HP Gance, for quick analysis of performance problems; HP PerfView, for performance management; and HP PerfRX, for capacity planning. These tools currently only work on HP-UX systems.

Amdahl have released a product called A+UMA, a commercial implementation of the Universal Management Architecture, a specification that has been presented to X/Open for approval. The data capture mechanism for UMA must be built into the kernel, so kernel modifications are needed to implement this architecture.

There are countless scripts written by system administrators for detecting problems indicated by the output of these commands. Some examples are in Mike Loukides' book.^[LOUK92]

11. Conclusion

UNIX performance data is easily made available to user level programs. UNIX has programs that provide performance related data. However, it needs tools to extract meaningful information from the data produced.

References

CADY90.

John Cady and Bruce Howarth, *Computer Systems Performance Management and Capacity Planning*, Advances In Computer Science, Prentice Hall, Sydney, Australia (1990).

COCK93.

Adrian Cockcroft, *Sun Performance Tuning Overview*, Sun Microsystems Computer Corporation Technical Marketing, Mountain View, CA, USA (December 1993). Part Number: 801-4872-07.

HOWA94.

Bruce Howarth, *Capacity management For UNIX Systems* (9 August 1994). Presented at the AUUG NSW Chapter meeting of 9 August 1994.

LEFF89.

Samual J. Leffler, Marshall Kirk McKusick, Michael J. Karels, and John S. Quarterman, *The Design and Implementation of the 4.3BSD UNIX Operating System*, Addison-Wesley, Menlo Park, CA, USA (1989).

LOUK92.

Mike Loukides, *System Performance Tuning*, Nutshell Handbooks, O'Reilly & Associates, Sebastopol, CA, USA (December 1992).

SUNM90.

Sun Microsystems, *SunOS Reference Manual*, Sun Microsystems Computer Corporation, Mountain View, CA, USA (March 1990). Part Number: 800-3827-10.

Unix Tricks and Traps

Years after having the idea, I've finally gotten around to writing the following program, which I call *listhosts*. It is for sites that use NIS (Yellow Pages) netgroups to group their hosts into categories. Unlike Unix groups, netgroups may be nested, so the program has to recurse.

Here's a simple application of *listhosts*: printing the name, operating system version, and other details for each host in the *sales* and *accounts* netgroups.

```
#!/bin/sh
for h in 'listhosts sales accounts'; do
    rsh -n $h uname -a
done
```

(This assumes that my account on the local host is "trusted" on the remote hosts, having entries in */etc/hosts.equiv* or my *.rhosts* file there. Some sites set things up that way, but for others it is too much of a security risk.)

The program would probably be faster if it used *ypcat*(1) to parse the entire netgroup map only once, rather than repeatedly calling *ypmatch*(1). However, it has proved fast enough for my purposes so far.

If you would like an electronic copy of *listhosts*, please email me.

Janet Jackson <janet@dialix.oz.au>

-o0o-

```
#!/usr/bin/perl

# Recursively traces one or more netgroups of hosts, tracing down the tree
# of nested netgroups. Outputs list of hosts on one line, or one per line
# if -l flag is given.

# Makes no attempt to sort or uniq the hostnames.

# Ignores any usernames in netgroups.

# If there are any loops in the netgroup nesting, it will get into an
# infinite loop. If any nonexistent netgroups are referenced, it will die.

# ypmatch must be in the path of the user's shell.

# Janet Jackson <janet@dialix.oz.au> 1994-09-21

$USAGE = "Usage: $0 [-l] netgroupname...\n";

require 'getopts.pl';
$@ && die "$0: require getopts.pl failed\n";

$separator = " ";          # string to separate hostnames with
&Getopts( 'l' );
$opt_l && ( $separator = "\n" );

@ARGV >= 1 || die $USAGE;

foreach $netgroup ( @ARGV )
{
    &trace( $netgroup );
}
print "\n";                # print final newline
exit 0;
```

(...program continued on next page)


```

sub trace
# USAGE: &trace( netgroupname );
# ACTION: traces netgroup recursively, outputting host names one per line.
{
    local( $netgroup ) = shift @_;

    local( $matchout ) = 'ypmatch $netgroup netgroup';
    $? && die "$0: ypmatch $netgroup netgroup failed: $?\n";

    chop( $matchout );          # remove newline
    $matchout =~ s/([\(\,])\s+/\1/; # remove whitespace after ( or ,
    $matchout =~ s/\s+([\,\)])/\1/; # remove whitespace before ) or ,

    local( $element );
    foreach $element ( split( /\s+/, $matchout ) )
    {
        if ( $element =~ /^^\(([^\,]*)\)/ )
        {
            print( "$sep$1" );          # a host entry: print hostname
            $sep || ($sep = $separator); # set $sep if that was 1st name printed
        }
        else
        {
            &trace( $element );        # another netgroup: recurse
        }
    } # foreach element
} # sub trace

#### end of file

```

-o0o-

Please send your contributions for this column to the Tricks & Traps / User Support Mailbox Sub-editor, Janet Jackson <janet@dialix.oz.au>, Phone/Fax (09) 272 5061. Suggestions for topics are also welcome.

AUUG Membership Categories

Once again a reminder for all "members" of AUUG to check that you are, in fact, a member, and that you still will be for the next two months.

There are 4 membership types, plus a newsletter subscription, any of which might be just right for you.

The membership categories are:

- Institutional Member
- Ordinary Member
- Student Member
- Honorary Life Member

Institutional memberships are primarily intended for university departments, companies, etc. This is a voting membership (one vote), which receives two copies of the newsletter. Institutional members can also delegate 2 representatives to attend AUUG meetings at members rates. AUUG is also keeping track of the licence status of institutional members. If, at some future date, we are able to offer a software tape distribution service, this would be available only to institutional members, whose relevant licences can be verified.

If your institution is not an institutional member, isn't it about time it became one?

Ordinary memberships are for individuals. This is also a voting membership (one vote), which receives a single copy of the newsletter. A primary difference from Institutional Membership is that the benefits of Ordinary Membership apply to the named member only. That is, only the member can obtain discounts an attendance at AUUG meetings, etc. Sending a representative isn't permitted.

Are **you** an AUUG member?

Student Memberships are for full time students at recognised academic institutions. This is a non voting membership which receives a single copy of the newsletter. Otherwise the benefits are as for Ordinary Members.

Honorary Life Membership is not a membership you can apply for, you must be elected to it. What's more, you must have been a member for at least 5 years before being elected.

It's also possible to subscribe to the newsletter without being an AUUG member. This saves you nothing financially, that is, the subscription price is greater than the membership dues. However, it might be appropriate for libraries, etc, which simply want copies of AUUGN to help fill their shelves, and have no actual interest in the contents, or the association.

Subscriptions are also available to members who have a need for more copies of AUUGN than their membership provides.

To find out your membership type, examine your membership card or the mailing label of this AUUGN. Both of these contain information about your current membership status. The first letter is your membership type code, M for regular members, S for students, and I for institutions, or R for newsletter subscription. Membership falls due in January or July, as appropriate. You will be invoiced prior to the expiry of your membership.

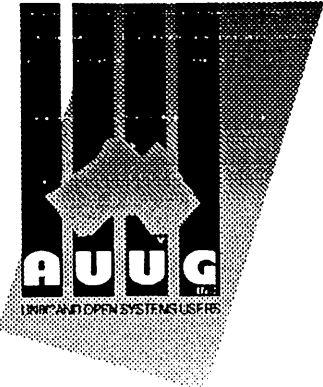
Check that your membership isn't about to expire and always keep your address up-to-date. Ask your colleagues if they received this issue of AUUGN, tell them that if not, it probably means that their membership has lapsed, or perhaps, they were never a member at all! Feel free to copy the membership forms, give one to everyone that you know.

If you want to join AUUG, or renew your membership, you will find forms in this issue of AUUGN. Send the appropriate form (with remittance) to the address indicated on it, and your membership will (re-)commence.

As a service to members, AUUG has arranged to accept payments via credit card. You can use your Bankcard (within Australia only), or your Visa or Mastercard by simply completing the authorisation on the application form.

MEMBERSHIP APPLICATION

INDIVIDUAL



To apply for AUUG membership, complete this form and return it with payment in Australian Dollars to:
REPLY PAID 66, AUUG MEMBERSHIP SECRETARY,
P.O. BOX 366, KENSINGTON, NSW 2033, AUSTRALIA
 Tel: +61 2 361-5994 Fax: +61 2 332-4066

Tick this box if you wish your name withheld from mailing lists made available to vendors.

NOTE: Please do not send purchase orders - perhaps your purchasing department will consider this form to be an invoice. Foreign applicants please send a bank draft drawn on an Australian bank, and remember to select either surface or air mail.

INDIVIDUAL OR STUDENT MEMBERSHIP:

I, _____ do hereby apply for:

- Renewal/New membership of AUUG \$ 90.00
- Renewal/New Student membership \$ 25.00 (please complete certification portion)
- International surface mail \$ 20.00
- International air mail \$ 60.00
- UniForum affiliate membership \$ 20.00

I agree that this membership will be subject to the rules and by-laws of AUUG as in force from time to time, and that this membership will run from time of joining/renewal until the end of the calendar or financial year.

Signature

Date

TOTAL REMITTED: AU\$ _____ (Cheques or money order, or credit card)

LOCAL CHAPTER DESIGNATE:

You can participate in the activities of a local AUUG Chapter. Part of your fee will be given to the chapter to support those activities. By default a regional chapter will be selected for you. If you would rather nominate a chapter, please specify here _____ (indicate NONE for no chapter).

TO BETTER SERVE YOU, PLEASE PRINT YOUR CONTACT INFORMATION:

Name/Contact: _____
 Position/Title: _____
 Company: _____
 Address: _____
 _____ Postcode _____
 Tel: BH _____ AH _____
 Fax: BH _____ AH _____
 email address: _____
Over for Institutional Membership

STUDENT MEMBER CERTIFICATION: (to be completed by a member of the academic staff)

I, _____ (administrator) certify that _____ (name) is a full time student at _____ (institution) and is expected to graduate approximately _____ (date).

 Signature

 Title Date

Please charge \$ _____ to my
 Bankcard, Visa, Mastercard
 Account number: _____
 Expiry date: _____
 Name on card: _____
 Signature: _____

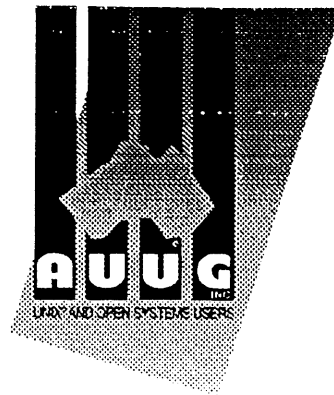
AUUG Secretariat Use

Chq: bank _____ bsb _____
 a/c _____ # _____
 Date: _____ \$ _____
 Initial: _____
 Date processed: _____
 Membership # _____

AUUG Inc. as a user group, exists to provide UNIX® and open systems users with relevant and practical information, services, and education through cooperation among users.

MEMBERSHIP APPLICATION

INSTITUTIONAL



To apply for AUUG membership, complete this form and return it with payment in Australian Dollars to:

**REPLY PAID 66, AUUG MEMBERSHIP SECRETARY,
P.O. BOX 366, KENSINGTON, NSW 2033, AUSTRALIA
Tel: +61 2 361-5994 Fax: +61 2 332-4066**

Tick this box if you wish your name withheld from mailing lists made available to vendors.

NOTE: Please do not send purchase orders - perhaps your purchasing department will consider this form to be an invoice. Foreign applicants please send a bank draft drawn on an Australian bank, and remember to select either surface or air mail.

We, _____
(Company Name)

do hereby apply for:

Renewal/New* Inst. membership of AUUG \$350.00
International surface mail \$ 40.00
International air mail \$120.00

TOTAL REMITTED AUD\$ _____

(Cheque, money order or credit card)

I/We agree that this membership will be subject to the rules and by-laws of AUUG as in force from time to time, and that this membership will run from time of joining renewal until the end of the calendar or financial year

I/We understand that I/we will receive two copies of the AUUG newsletter, and may send two representatives to AUUG sponsored events at member rates, though I/we will have only one vote in AUUG elections, and other ballots as required.

Signed _____ Date _____

Title _____

INSTITUTIONAL MEMBER DETAILS:

To be completed by institutional members only.

Following are our specified contacts. The primary contact holds the full member voting rights. The two designated reps will also be given membership rates to AUUG activities including chapter activities. By default a regional chapter will be selected for you. If you would rather nominate a chapter, please specify in space provided (indicate NONE for no chapter). (Please print clearly or type)

Primary Contact _____

Position/Title _____

Address _____

Postcode _____

Bus. Tel: _____ Bus. Fax: _____

e-mail address _____

Local Chapter Pref. _____

1st Rep. _____

Position/Title _____

Address _____

Bus. Tel: _____ Bus. Fax: _____

e-mail Address _____

Local Chapter Pref. _____

2nd Rep. _____

Position/Title _____

Address _____

Bus. Tel: _____ Bus. Fax: _____

e-mail address _____

Local Chapter Pref. _____

Please charge \$ _____ to my

Bankcard, Visa, Mastercard

Account number: _____

Expiry date: _____

Name on card: _____

Signature: _____

AUUG Secretariat Use

Chq: bank _____ bsb _____

a/c _____ # _____

Date: _____ \$ _____

Initial: _____

Date processed: _____

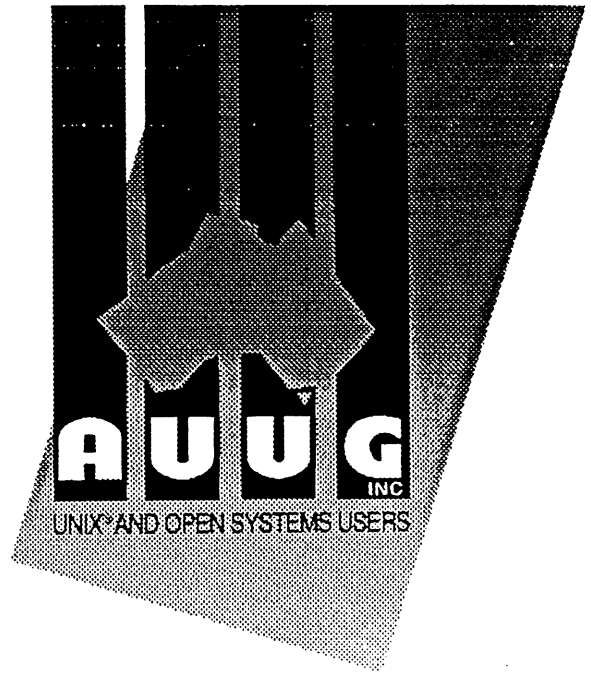
Membership # _____

AUUG Inc. as a user group, exists to provide UNIX® and open systems users with relevant and practical information, services, and education through cooperation among users.

Notification of Change

You can help us! If you have changed your mailing address, phone, title, or any other contact information, please keep us updated. Complete the following information and either fax it to the AUUG Membership Secretary on (02) 332-4066 or post it to:

AUUG Membership Secretary
 P.O. Box 366
 Kensington, NSW 2033
 Australia



(Please allow at least 4 weeks for the change of address to take effect..)

- The following changes are for my personal details, member #: _____
- The following changes are for our Institutional Member, primary contact.
- The following changes are for our Institutional Member, representative 1.
- The following changes are for our Institutional Member, representative 2.

PLEASE PRINT YOUR OLD CONTACT INFORMATION (OR ATTACH A MAILING LABEL):

Name/Contact: _____
 Position/Title: _____
 Company: _____
 Address: _____
 _____ Postcode _____
 Tel: BH _____ AH _____
 Fax: BH _____ AH _____
 email address: _____

PLEASE PRINT YOUR NEW CONTACT INFORMATION:

Name/Contact: _____
 Position/Title: _____
 Company: _____
 Address: _____
 _____ Postcode _____
 Tel: BH _____ AH _____
 Fax: BH _____ AH _____
 email address: _____

AUUG Secretariat Use

Date: _____
 Initial: _____
 Date processed: _____
 Membership # _____



AUUG Incorporated

Application for Newsletter Subscription

AUUG Inc.

Non members who wish to apply for a subscription to the Australian UNIX systems User Group Newsletter, or members who desire additional subscriptions, should complete this form and return it to:

AUUG Membership Secretary
 PO Box 366
 Kensington NSW 2033
 Australia

- Please don't send purchase orders — perhaps your purchasing department will consider this form to be an invoice.
- Foreign applicants please send a bank draft drawn on an Australian bank, or credit card authorisation, and remember to select either surface or air mail.
- Use multiple copies of this form if copies of AUUGN are to be dispatched to differing addresses.

This form is valid only until 31st May, 1995

Please *enter / renew* my subscription for the Australian UNIX systems User Group Newsletter, as follows:

Name: Phone: (bh)
 Address: (ah)

 Net Address:

 Write "Unchanged" if address has
 not altered and this is a renewal.

For each copy requested, I enclose:

- Subscription to AUUGN \$ 150.00**
- International Surface Mail \$ 20.00
- International Air Mail \$ 60.00

Copies requested (to above address) _____

Total remitted AUD\$ _____
 (cheque, money order, credit card)

- Tick this box if you wish your name & address withheld from mailing lists made available to vendors.
- ** This includes a copy of the proceedings of the AUUG Winter Conference.

Please charge \$ _____ to my Bankcard Visa Mastercard.
 Account number: _____ . Expiry date: ____ / ____ .
 Name on card: _____ Signed: _____

Office use only:

Chq: bank _____ bsb _____ - _____ a/c _____ # _____
 Date: ____ / ____ / ____ \$ _____ CC type ____ V# _____
 Who: _____ Subscr# _____