

AUUGN

The Journal of AUUG Inc.

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April 1995



Sex, Lies & Policy Manuals

AUUG 95 & Asia Pacific WWW Conferences combine
Productivity through better UI design
Open Systems & Open Networks

... plus reviews, Chapter news, and more

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Inc.

UNIX & OPEN SYSTEMS USERS

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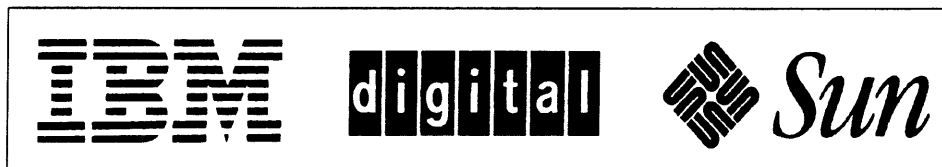
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Submission Guidelines

Submission guidelines for AUUGN contributions are regularly posted on the [aus.org.auug](http://www.aug.org.au) news group. They are also available from the AUUG World Wide Web site at <http://www.aug.org.au>

Alternately, e-mail to the above correspondence address, requesting a copy.

AUUGN Back-Issues

A variety of back-issues of AUUGN are still available; for price and availability details, 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 copies of the Conference Proceedings from previous AUUG Conferences are still available, at \$50 each for members, and \$60 for non-members. Contact the AUUG Secretariat for details.

Mailing Lists

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Contribution deadlines for AUUGN in 1995

- Vol 16, #3 (June): May 19
- Vol 16, #4 (August): July 21
- Vol 16, #5 (October): September 22
- Vol 16, #6 (December): November 17

Editorial

Phil Anderson
<auugn@auug.org.au>

April already! Gee, it feels like only yesterday that I was up in Sydney, contemplating the editorial challenges ahead. I hope you all liked the last issue; I haven't had much feedback from the general membership—anyone out there?—but thanks to those who've taken the time to let me know what you thought of it.

Now that AUUG's World Wide Web (WWW) site is up and running at <http://www.auug.org.au>, we're experimenting with making selected articles and papers from *AUUGN* available there as well. You can reach *AUUGN on the Web* from the AUUG home page, but it has its own home page as well. Point your Web browser at <http://www.auug.org.au/auug/auugn/auugnHome.html> to go straight there. Please let us know what you think of the idea.

Assembling the material to go into *AUUGN on the Web* had me thinking about the future of paper journals like *AUUGN*. There's a strong undercurrent of thought around the traps that believes online publishing is where it's at; the problems of distributing electronic journals are fast disappearing, and the economics sound.

While I don't yet agree that that's true in the general market, there are plenty of niche audiences for whom access to e-mail, usenet news and the WWW is not a substantial hurdle. Some publications are already well aware that there's a growing audience for electronic journals.

WIRED have had their companion e-publication (*HotWIRED*) online for some months now, with enormous success. You may have seen that Melbourne's *Beat* magazine now produces an online version of each entire issue, as well as the paper version. The point to note here, is that *HotWIRED* and both versions of *Beat* are free to consumers; being funded by advertising.

The AUUG membership is—in principle—a well established part of the electronic community. Is *AUUGN*'s future an online one? Members would have access to material more rapidly, and it might even encourage more interaction, with members e-mailing comments to the editor even while reading the journal.

Of course, this assumes that every *AUUGN* reader has direct access to the Internet, which is probably not true. It also assumes that you don't mind doing your reading from a monitor, and that the aroma of freshly printed woodpulp does nothing for you. Me, I like the smell of paper in the morning ... how 'bout you?

President's report

Phil McCrea
<pmc@syd.dit.csiro.au>

Most of you will have heard by now that we have decided to combine AUUG '95 with the Asia/Pacific World Wide Web Conference '95. (*If you haven't, take a look at the press release on the next page - Ed.*) This is an exciting venture for AUUG, and will ensure a much richer conference for delegates. Let me give you some background on why we decided to combine the two conferences.

In the middle of last year the AUUG Management Committee picked the theme **The Internet Means Business** for AUUG '95. We did have quite a few other suggestions, some of which conveyed some sentiment about operating systems from Microsoft... We normally select next year's conference date and theme well in advance of the current year's conference, to provide enough time for artwork to be created so we can advertise the event at the current year's conference. It also makes it easier for our exhibition organiser (Wael Foda of ACMS) to persuade exhibitors at the current conference to exhibit the following year.

A Programme Committee was set up, and we made a list of speakers to approach. We decided at the outset that, whilst the conference theme is on the Internet, we still needed to make sure that the programme would contain a strong 'traditional' technical UNIX component. We also took note of some of the incredibly successful World Wide Web conferences that were beginning to be held in the US and elsewhere. An examination of some of the speakers at these events gave us ideas for names of people to approach.

Earlier this year we learned of a WWW conference which was being organised by Charles Sturt University (CSU), which has campuses in both Albury and Wagga Wagga. CSU was planning to hold a conference entitled the "Asia Pacific WWW conference in Wagga Wagga", under the name of WWWWW! This was to be held at exactly the same time as AUUG '95. Furthermore, we discovered that AUUG and CSU had approached some of the same overseas experts to be keynote speakers...

So we got in touch with each other and compared notes. We discovered that the WWWWW organisers were also planning to hold an exhibition, and had obtained expressions of interest from organisations who we would like to also have at AUUG 95. The WWWWW organisers had publicised their event on the web, and had received expressions of interest in attending from all over the world - so many in fact that they began to question whether Wagga Wagga was indeed an appropriate venue. And then of course we discovered we had approached the same speakers...

AUUG Press Release:

AUUG '95 and the Asia Pacific World Wide Web '95 Conference Join Forces

The Australian UNIX and Open Systems Users Group (AUUG) and Charles Sturt University announced today that they have signed a memorandum of understanding to stage a joint conference at Darling Harbour on September 18-21, 1995. The conference and exhibition will be known as "The Internet means Bu\$iness", and will incorporate AUUG '95 and the Asia/Pacific World Wide Web Conference '95.

AUUG President Dr. Philip McCrea said "The Web is an extremely important phenomenon. It opens extraordinary opportunities for information dissemination, low-level publishing and customer service. By combining these two conferences we can offer AUUG members and the IT community at large the opportunity of addressing all issues relating to the Internet and the Web at the one time and the one place."

The conference series will retain two separate programmes with several streams. AUUG streams will cover the latest trends, standards, and issues in the UNIX and open systems area, including network security, server administration, distributed systems and case studies of successful migration to open systems. Web streams will look at the use of the World Wide Web in research, development, practice, and the practical use of it to disseminate information by

education, government, business and industry. This will include sessions on information delivery and retrieval, HTML (Hypertext mark-up language) and information security.

Professor Bryan Rothwell, Pro-Vice-Chancellor of Charles Sturt University, said "The multimedia capacity of the World Wide Web is rapidly changing the way we work, learn and play. The forthcoming Asia/Pacific World Wide Web Conference is the first international meeting about this important new means of communication to be held in this country. It will also draw international attention to Australia's role in the development of the Information Superhighway".

Already the largest event for UNIX and Open Systems users in the Asia/Pacific region, this years Exhibition, which is held concurrently with the Conference, will also include the largest display of Web-related computer and communications hardware and software ever assembled in Australia. This will be the first opportunity for visitors to see and investigate all that UNIX, Open Systems, Internet and the Web have to offer.

For further information please contact: Wael Foda
AUUG Inc.(02) 332 4622 Lachie HillMedia Solutions
(02) 202 8317

President's Report (from page 3)

The prospect of having two reasonably large conferences with related themes competing with each other for speakers, sponsorship, and delegates was not something either conference relished. In addition, the ACS is holding their annual conference the week after AUUG '95 in Queensland. So that came to three major IT conferences within two weeks in three different parts of the country.

Hence we began discussing combining AUUG '95 with WWW, and hold the combined event at Darling Harbour. We signed a Memorandum of Understanding stating how we would work together. In a nutshell, we will have a single conference committee, comprising three CSU and three AUUG members, along with Wael Foda of ACMS. This committee will look after the finances and logistics of the conference. However we will retain two separate Programme Committees, which will be responsible for the speakers, tutorials, etc. We have yet to determine how many streams there will be overall, but there will be a conventional UNIX technical stream, a 'management stream' which may well have a

combined Open Systems and WWW theme, and one or more WWW streams.

The only change we have had to make is the dates in the Call For Papers. The WWW CFP deadline is May 15, and so AUUG has extended our CFP deadline to coincide with this date. This will allow the two Programme Committees to coordinate the programmes more effectively.

From a political perspective, having a high profile conference featuring the Internet and the WWW within a UNIX framework will present exactly the right sort of message to the Australian community at large: the Internet and its services are based on open, cooperative technologies, giving rise to an open, competitive Internet Service Provider industry: it is *not* the province of any one organisation or company. Need I say more...

In summary, I believe that AUUG members will benefit from this much larger event. We retain our traditional AUUG focus, and augment it with one or more streams of WWW topics, which is certainly an area of interest to most AUUG members.

Information:

ATUG '95 Conference and Exhibition

Asia-Pacific's premier telecommunications and networking event

by Richard Allen
Deputy Executive Director, ATUG

Convergence is the theme of this year's ATUG 95 to be held at Sydney's Darling Harbour, May 1-4. A major highlight will be the ATUG Interop Network (AIN 95), a city-size 'intelligent' network to which exhibitors can connect to demonstrate their latest applications, technologies and product capabilities.

The importance of understanding the implications of convergence is not to be underestimated. Convergence is creating new businesses opportunities by eroding the technology boundaries built by earlier technologies and modes of thinking. Key telcos and telecomms companies need to view the future through the lens of convergence and to do this they need to develop real understanding of what is happening in other sectors and companies.

Keeping thinking open to avoiding the mind sets of the past is critical in a dynamic industry with new applications and services constantly being developed and promoted. ATUG 95 is a real meeting of minds - exhibitors and delegates get the opportunity to listen to and speak with business telecommunications uses and hear first-hand the real issues, problems and suggested solutions.

Visitors get the chance to understand new applications and technologies, and the highly skilled people that are building the ATUG Interop Network - the AIN, get the rare and invaluable opportunity to work together and interact with their competitors to build Australia's most sophisticated network.

To see companies and people who usually compete tooth and nail in the marketplace work together to share their technology for the benefit of all, is a fine example of true Australian spirit.

Convergence is therefore much more than technology - it is a change in the way we view and use technology. To achieve this change we need understanding and knowledge - this is what ATUG 95 is all about - sharing knowledge. What new ideas and applications will come out of this year's ATUG event? You can either wait and see or you can get involved and be part of the future.

When we had the idea in 1993 to create such a forum as the AIN, I never envisaged it would get so many companies and people involved - this year there are around 40 companies involved in the Atug Interop Network and the Internet, Teleworking and Multimedia Showcase areas.

The acceptance by Microsoft's Bill Gates to open ATUG 95 on May 2 is an excellent indication that the exhibition and conference is now recognised as the key annual telecommunications and networking event in the Asia Pacific region.

The ATUG 95 exhibition and conference is an essential annual meeting place and knowledge-exchange forum for technology managers, service providers, suppliers and business users - I look forward to meeting you there and sharing your thoughts about the future.

About the conference...

The ATUG conference is the annual forum for the Australian Telecommunications Users' Group. ATUG 95's theme is "Content, Connectivity and Convergence: Solving the Communications Puzzle".

The conference will feature major addresses by Government Ministers, CEOs of the carriers, major service providers and the computer industry; as well as engineers, lawyers, union leaders, consumer groups, Austel, equipment suppliers and international representatives. They will address the topics of new communications technologies, their applications and the regulatory environment in which they operate.

Speakers include:

- Mr. Bob Neal, Director of Information Technology, Atlanta Committee for the Olympic Games
- Mr. Roel Piper, President and CEO of UB Networks USA
- Mr. Mogens Dam-Anderson, Copenhagen Energy
- Mr. Patrick Gelsinger, Vice President and General Manager of Intel USA's Personal Conferencing Division.

Some 13,000 people are expected to attend the associated technology exhibition. ATUG has kindly provided entry passes to AUUG members, accompanying this issue.

The architect and builders of the ATUG Interop Network

The ATUG Interop Network (AIN 95), is a city-size 'intelligent' network to which ATUG 95 exhibitors can connect to demonstrate their latest applications, technologies and product capabilities.

By connecting to the AIN's advanced network capabilities, exhibitors can also interconnect their products and compute-intensive applications like voice, multimedia, image and video to those of other exhibitors, outside organisations or to wherever they like in the world.

Around \$5 million of resources provided by an ever growing number of suppliers, telcos and IT companies will go into the ATM-based AIN to provide a demonstration forum for many of the around 200 exhibitors.

It is the second year the AIN is being staged at the ATUG annual exhibition and conference and it is again being designed and managed by JNA Network Services' Bill Hayne and Geoff Letts.

"The aim of the AIN is to provide a live demonstration vehicle for visitors to experience 'business ready' technology and to highlight the interoperability of various manufacturers' implementations," said Mr. Letts, Manager, Applied Technology, JNA.

Mr. Letts said the challenge in 1994, was to design, get the equipment and build the network in three months. "AIN 95 is no less a challenge. We have more people to support the network build-up but the scope of the project has increased five-fold," he said.

The AIN concept is to establish two classes of network to which exhibitors can connect to demonstrate their systems and services. First, there will be a Business Backbone Network which provides access to AIN services such as file servers, E-mail and Internet access, and is protected by tightly controlled access to ensure maximum availability.

Additionally, there are a number of development networks, the so called "sandpits" that are managed co-operatively by the exhibitors who build them by directly interconnecting different vendors' implementations of a particular network technology.

The sandpits provide an opportunity for exhibitors to demonstrate commercially available networking systems without the necessary restrictions placed on the business backbone.

The AIN 95 will see a migration in sophistication for the business backbone moving from FDDI to ATM and FDDI, and an expanded number of sandpit networks which will include 100BaseVG and Frame Relay.

"The AIN will be extended this year to include three 'hands on' Showcase areas for technology that is of

broad interest. These Showcases will cover multimedia, teleworking and the Internet," said Mr. Richard Allen, Deputy Executive Director, Australian Telecommunications Users Group (ATUG).

The AIN will also control multimedia presentations and the 'real-time screening of ATUG 95 Conference highlights on a large video wall which will be erected in the exhibition area.

The AIN committee also co-ordinates the technical and promotional aspects of 10 AIN workgroups. These workgroups and their co-ordinators are:

ATMPeter Stevenson, JNA 802.12/100VGTim Burgess, Hewlett-Packard 100Base TTorsten Krumm, Intel FDDIJason Caley, Digital Equipment Corporation File ServicesLembit Pikkat, Novell X.400/X.500Andrew Probert, Datacraft Frame RelayNorm Gale, Nortel Application showcase workgroups MultimediaBrian White, Amos Aked Swift InternetJohn Whitney, IBM Teleworking/SOHOAnne Moffat, Technology Solutions

Mr. Allen, said that the AIN is a major commitment by JNA and over 45 vendors and service providers to the development of Australian telecommunications and IT expertise.

"It would not have been successful without the spirit of co-operation demonstrated by the many vendor organisations and their people," he said.

"To see companies and people who usually compete tooth and nail in the marketplace work together to share their technology for the benefit of all, is a fine example of true Australian spirit."

He said the ATUG 95 exhibition and conference, which is Asia-Pacific's premier annual telecommunications event, is recognised as essential annual meeting place and knowledge-exchange forum for technology managers, service providers, suppliers and business users.

"The acceptance by Microsoft's Bill Gates to open ATUG 95 on May 2 is an excellent indication that the exhibition and conference is now recognised as the key annual telecommunications and networking event in the Asia Pacific region.

"The AIN 95 is much more than technology - it is a change in the way we view and use technology. To achieve this change we need understanding and knowledge - this is what the AIN aims to provide.

"The AIN 95 is a real meeting of minds as the participants, many from competing companies, get to share knowledge, interact and work together to build Australia's most sophisticated network," said Mr. Allen.

Conferences & Announcements

Attention AUUG Institutional Members!

Erni Wade, UniForum Association's Manager of Trade Shows & Events has put forward the following suggestion:

Hello Everyone!

We have come up with an idea and would like your comments. It has been suggested that at UniForum '96 we have an international pavilion. This pavilion would feature either table top displays or perhaps 10'x10' booth areas - or perhaps both. The cost would be nominal for participation in the pavilion. The idea is to feature companies from our affiliate countries. As our affiliate, you would offer this opportunity to perhaps your corporate sponsors or any company that normally would not participate in the show due to high costs of exhibiting. Attendees at UF'96 would see companies from So. Africa, New Zealand, Hungary, etc. Does this sound like something interesting? Do you think companies in your country would be interested. Talk around and let me know your thoughts.

Please e-mail your expressions of interest or thoughts regarding this idea to auug@auug.org.au with the subject line: UniForum 96 - International pavilion idea. If you don't have e-mail access, drop a line to the AUUG offices.

June 5-7, 1995

5th USENIX UNIX security symposium

Sponsored by the USENIX Association, in cooperation with The Computer Emergency Response Team (CERT), IFIP WG 11.4, and UniForum (pending) Marriott Hotel, Salt Lake City, Utah

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

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 three-day, single-track symposium, consisting of tutorials, refereed and invited technical presentations, and panel sessions.

The first day will be devoted to tutorial presentations designed to address the needs of both technical and management attendees. Tutorials will supply overviews of various security mechanisms and policies. Each will provide specifics for implementing

numerous local and network security precautions, firewalls, and monitoring systems.

The keynote address by Stephen T. Walker, Founder and President of Trusted Information Systems, Inc., will open the two days of technical sessions. Mr. Walker will speak on information security and privacy in computing. 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 and Works-in-Progress Reports.

June 26-29, 1995

USENIX conference on object-oriented technologies (COOTS)

Monterey Conference Center, Monterey, California

Program Chair: Vince Russo, Purdue University

Tutorial Program Chair: Doug Lea, SUNY Oswego

The COOTS conference is designed to be the showplace for advanced development work in object-oriented technologies. The conference will emphasize research and experience derived from efforts to use object-oriented techniques to build complex systems that meet real world needs.

The two-day tutorial program will offer a selection of tutorials; we expect tutorial topics to include: distributed object systems (CORBA, etc.); object-oriented network programming; alternative object-oriented languages; advanced techniques in memory management; efficient and effective class design. Two days of technical sessions will follow the tutorials.

Like the USENIX C++ Conferences and Advanced Topics Workshops from which it is derived, COOTS will emphasize advanced engineering aspects of object technology.

July 6-8, 1995

TCL/TK WORKSHOP 95

Sponsored by Unisys Inc. and the USENIX Association Royal York Hotel, Toronto, Ontario, Canada

Program co-chairs: Ben Bederson, University of New Mexico and Will Wilbrink, Unisys Inc.

The third annual Tcl/Tk workshop will act as a focus for Tcl/Tk research, provide a mechanism for communication of research, provide a forum for discussing open issues and possible solutions, and promote collaboration within the Tcl/Tk community.

The workshop will feature invited addresses by distinguished Tcl/Tk researchers, refereed paper presentations and demonstration of original non-commercial research, and informal demonstrations of commercial applications.

Registration

Attendance will be limited to 150 active Tcl/Tk users. To register, please submit no more than 1/2 page describing your reason for attending the workshop. Registration requests may be submitted via email to: w95@system9.unisys.com, via mail to:

Tcl/Tk Workshop 95
c/o Unisys Canada Inc.
61 Middlefield Rd.
Scarborough
Ontario, M1S 5A9, Canada
or via fax to (416) 297-2520.

Upon acceptance, attendees will receive instructions for payment for the workshop of US\$250, which includes a copy of the proceedings, lunches, coffee, snacks and a reception/dinner.

ANNOUNCEMENT & CALL FOR PARTICIPATION:

July 11-14, 1995

USENIX workshop on electronic commerce

Sheraton New York Hotel & Towers, New York, New York

Program Chair: Daniel E. Geer, Jr., OpenVision Technologies, Inc.

The first USENIX Workshop on Electronic Commerce will provide the major opportunity for researchers, experimenters, and proto-practitioners in this rapidly self-defining field to exchange ideas and present results of their work. This meeting will set the technical agenda this area by deriving and/or certifying the most urgent questions, discovering directions in which answers might be pursued, and revealing cross-connections that otherwise might go unnoticed.

This four-day event has an unusual structure: its first two days will follow a workshop format at which attendance is by invitation in response to submission to the program committee. (Attendance will be capped at 100.) The latter two days will be tutorial in nature and open to all. The multi-tracked workshop, July 11-12, will feature refereed and position paper presentations, reports of works-in-progress, technological debates, and identification of hard-to-impossible problems. Birds-of-a-Feather sessions, a dinner speaker, and a Keynote speaker will round out these two very full days and nights.

The following two days, July 13-14, will offer four half-day tutorials bracketing an evening session of free-form Q&A. The half-day tutorials will be repeated on a rolling basis, so that participants will be able to attend most of them. Acknowledged technical leaders in this critical, cutting-edge technology will lead the tutorials and serve as sounding boards during this tutorial portion.

All persons wishing to attend the multi-tracked workshop, July 11-12, are requested to submit a formal

paper (via extended abstract) for a conventional referee process or, where less formal submission is desirable, a position paper or some other statement of the nature of their contribution.

We seek original and innovative papers, demonstrations, video tapes, position papers and general smart work about current developments in electronic commerce, its precursors and/or its infrastructure. We are especially interested in reports on practical experiences with such systems.

Non-refereed papers, broadsides, commercial siren songs and more, all likely to be in evidence, are appropriate and will be praised or debunked as they warrant.

Dates for refereed paper submissions

- extended abstracts due May 8
- notification to authors May 22
- camera-ready final papers due June 15, 1995

For questions about submissions and other program concerns, contact the Program Chair, Daniel E. Geer.

Send submissions to:

Daniel E. Geer,
OpenVision Technologies, Inc.,
One Main St.,
Cambridge, MA 02142 USA

Tel.: +1 617 374 3700,
Fax: +1 617 374 3715,
E-mail: geer@cam.ov.com

ANNOUNCEMENT & REVISED CALL FOR PAPERS:

September 18-21, 1995

AUUG '95 / Asia Pacific World Wide Web '95

The big change this year is the joint conference with Asia Pacific World Wide Web '95 (aka WWWWWW).

AUUG's Call for Papers deadline has been extended to May 15th.

We will probably have the use of both halls in the Darling Harbour auditorium, and be using more of the compact rooms for alternative streams. We will have the usual two streams for AUUG papers—technical and management—both on the theme **The Internet Means Business**.

We think most internet business is being conducted on UNIX systems, even if most internet consumers soon will be based on PCs. So we can expect to hear from many people developing internet applications for open systems.

Invited speakers already confirmed for this year:

Paul Mockapetris chair of the IETF, the organisation that steers development of the internet, and an expert on DNS and ATM.

Scott Bradner a member of the IETF, famous for benchmarking router boxes, and an expert on IPv6, the

soon-to-be all-singing-all-dancing replacement for the current Internet Protocol.

We expect to hold tutorials on WWW authoring, firewall maintenance, DNS management, cryptography, and Perl programming, to name but a few.

ANNOUNCEMENT & CALL FOR PARTICIPATION:

September 18-22, 1995

9th USENIX systems administration conference (LISA '95)

Co-sponsored by USENIX and SAGE, the System Administrators Guild Monterey Conference Center, Monterey, California

Program Chairs: Tina Darmohray, Lawrence Livermore National Laboratory, and Paul Evans, Synopses, Inc.

The USENIX Systems Administration (LISA) Conference is widely recognized as the leading technical conference for system administrators from sites of all sizes and kinds. What the 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.

The conference's two-day-long tutorial program will feature full- and half-day tutorials, offering expert instruction to system administrators at all levels from novice through senior. The three days of technical sessions will consist of two parallel tracks: the first track dedicated to presentations of refereed technical papers and the second intended to accommodate invited talks, panels and Works-in-Progress sessions.

Vendor representatives will demonstrate products and services at the informal table-top display.

Dates for submissions to the Refereed Paper Track

- extended abstracts due May 1
- notification to authors June 5
- final papers due August 1, 1995

An extended abstract is required for the referee process. If you send a full paper, you must also include an extended abstract of 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 extended abstract and whether the work advances the state of the art of system administration.

Please submit extended abstracts by two of the following methods: e-mail to lisa9papers@usenix.org; Fax to +1 51 548 5738; mail to

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USENIX Association
2560 Ninth St., Suite 215
Berkeley, CA USA 94710

To discuss potential submissions, and for inquiries regarding the content of the conference program, contact the program co-chair at lisa9chair@usenix.org or at: Tina M. Darmohray, phone 510 443 4425, Fax 415 962 0842, e-mail: tmd@usenix.org.

Submissions to the Invited Talk Track: If you have a topic of general interest to system administrators, but is not suited to a traditional paper submission, please submit a proposal to the invited talk coordinator at [<ltlisa@usenix.org>](mailto:ltlisa@usenix.org) or to Laura de Leon, Hewlett-Packard, +1 415 857 5605, Fax +1 415 857 5686, e-mail deleon@hpl.hp.com.

Pre-conference workshop

A one-day, pre-LISA conference workshop "Advanced Topics in System Administration" will be held Tuesday, September 19. The workshop will focus on a discussion of the latest-breaking technical issues in the systems administration arena as introduced by participants. Attendance is limited and based on acceptance of a position paper.

Potential attendees are invited to submit a proposal of at most 3 pages (ASCII). Proposals should briefly contain a topic for discussion, an explanation of what makes this topic controversial or interesting, and a personal position. Participants must be pre-registered for the LISA conference. No additional fee will be charged to attend and lunch will be provided. Email proposals to the workshop organizer, John Schimmel of Silicon Graphics, to jes@sgi.com by August 1; selected participants will be notified by August 14, 1995

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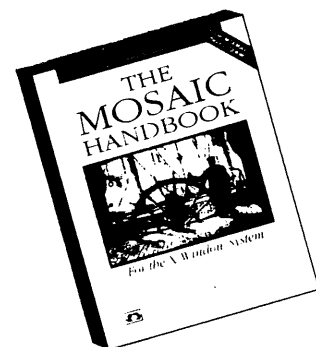


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Issues:

The Internet - will your kids know more than you?

Frank Crawford <frank@photon.ansto.gov.au>

With the start of the school year, it is worth looking at what is going on at your local school. As with the rest of the world, both primary and secondary schools are looking at computers, electronic communication and in particular, the Internet. In schools today children already are learning how to use computers, be they Macintoshes or IBM PCs, starting from kindergarten, and on through high school. Many children have more exposure to computers by the time they finish kindergarten, than their parents have ever had!

If you visit a school, or talk to any school-aged children, you will find that they use computers in tasks ranging from learning to count and read, to the production of a class newspaper, through to the recording and production of reports on class activities, including QuickTime photos and sound. In fact any area that computers are used in outside of the school arena are also found at some school, somewhere.

Certainly, some schools are better off than others. Private schools often have better equipment, but many state schools are not far behind. The biggest factor more often than not, is the drive of a single teacher who can both see how to make use of a computer and how to get one. More recently, the NSW School English Syllabus includes specific topics on computer usage.

The next step is the use of the electronic communications. Already some students are using such facilities as Nexus or Keylink to keep in touch with each other. Others have taken this further and are now using the Internet for their communication projects. For example expanding their knowledge about other countries through email to overseas students, or looking at online images of great works of art at the Louvre. Obviously this trend needs both experience and training in the use of these facilities. A pilot project in the ACT is connecting a number of schools with 9.6Kbps links (or even 64Kbps ISDN links) to AARNet, and, a very important step, teaching some of the staff how to use these facilities. Many of these schools have World Wide Web (WWW) pages which would impress many a commercial organisation.

In NSW there are a number of pilot projects currently starting, for example the University of Wollongong will be linking a number of local schools. A separate

commercial Internet service provider is SchoolsNET, based in Victoria. They offer special connections for schools, have available a large number of lesson plans, and offer assistance to schools to make best use of the Internet.

Connection to the Internet opens up a number of new and different uses for teachers. There is a special newsgroup hierarchy, "k12", for both use by students and discussion of teaching issues. As well there are a number of places where lesson plans can be downloaded by FTP. Finally, the information that can be found on the Internet can generate so many ideas for any teachers; a project on the Earth, for example, can use images directly from the NASA archives.

This however, does bring up some problems. Most teachers don't really know how to use this technology, because they—like most people—have never been exposed to it. Your local school can use your help. This can range from going and helping children to use a computer, to giving the school technical support and assistance in setting up and maintaining an Internet connection. Your school will be happy to accept your help, and you will get a chance to try and keep up with your children.

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Advice:

Productivity through better user interface design

Andrew Vanderstock <ajv@rmit.edu.au >

Too often new corporate systems are imposed on an unwilling work force, and to make things worse, these systems are often so badly implemented, that many users revolt and work against the new system. Here are some simple pointers for a successful corporate system.

Whether you are considering off-the-shelf packages, or are developing a custom system, the final product should adhere to a basic design rule: the user comes first. If the user is constantly fighting the product or is perpetually confused, productivity is lost. Training users is essential, but training users on a poorly designed product takes longer for less return. It is far better to have the product designed properly from the beginning.

The final users of the product should be involved in the design, usability testing and debugging (beta) cycles of your software. Although this is taught in high school computer science curriculums, often users hear of a new system the day after it has been installed.

Often busy workers are reluctant to take time out to attend design meetings, but without their input the final system will be worthless. This is also an ideal time to look at the entire work flow process, to find obvious optimisation or to reduce useless paper reports (the paperless office, hah!)

If at all possible, software should always "feel" stable, and not likely to do random things with user data. Similar modules throughout the package should work in a similar fashion - this will often lead to code reuse, which will reduce code maintenance as an extra bonus.

Every application should be able to back out of any dialog or screen without affecting data. Often the escape key, or another dedicated key is used to cancel the current operation. This key should always be the same throughout the package - if it is F3 in one module, it should be F3 in all modules. The same applies to "Quit", "Help", and any common functions throughout your package.

Screens or dialog boxes should have a similar layout throughout the product. Items that are currently not available should not simply disappear; most GUI systems have a method to "gray out" the unavailable

choices. In text based systems, use emphasis on selectable items. In GUI systems, buttons like the "OK" (or another action verb), "Help" and "Cancel" should always be in the same place throughout your product. Random positioning of UI elements slows even experienced users.

Many programmers detest user documentation. They put off writing online help and documentation until the very end. This is wrong; help for each module should be written alongside the actual module. Well written, concise online help and user documentation must exist for users to trust your product. Help should be written from a process point of view ("how do I...?"), and not just a single paragraph describing each module's function. If the "how do I...?" explanations take more than a page on screen, redesign the module and rewrite the help text until it fits.

Documentation should be mostly electronic, as this is where the user is most likely to use it. User documentation should include a tutorial, reference, and a quick glance overview of the entire package. Table of Contents, Glossaries and Indexes are essential. Administration documentation should include any additional guides or errata as necessary - but treat the administrator as just another user - not as some technical guru. There should be detailed installation instructions, with descriptions of what is put where and for what reason.

Avoid frayed tempers and lengthy installation woes - roll a new installation out in parallel with the current system. This allows the new system to be tested without becoming critical to the company's bottom line.

With a small amount of effort, a well designed, well thought out system will integrate well into any company. Users are less likely to be confused or unproductive with systems they helped design and test. A well designed product requires less training and gives more back to a company over time than a badly designed and implemented one.

There are many powerful X11-based prototyping tools, such as UIL, the bundled Motif User Interface Language compiler, which allow you to prototype and refine your user interface even before a line of real code is written. Tk/Tcl is a freeware user interface interpreter and toolkit, which can interface with powerful scripting languages, like Perl. Tools like this can help you quickly flesh out your program, test it with real end users, and help you gain an idea of the work your program needs to do.

The author acknowledges the help with open systems interface tools for this article given to him by Luke Mewburn and Marc Boschma.

Paper:
**Sex, Lies and Policy
Manuals**

**Developing an effective policy and
procedures manual for Open Systems**

Alan Main
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Abstract

"Effective systems management depends primarily on strategic planning and implementation of policy based management. You simply can't count on technology to see you through. You need to establish the policy and procedures governing your hardware, software and staff which will allow you to establish uniform, centralised management without being inflexible. This is a daunting task, however, it is achievable."

— *The Network and System Manager's Best Practices Report, March 1994*

One of the most effective ways of implementing policy based management is through the development of a policies and procedures manual.

This paper outlines a practical approach to developing an effective policy manual and discusses why you should have one, how to go about it and what to put in it.

Sex, Lies and Policy Manuals...

The connection between sex, lies and policy manuals is not intuitively obvious.

So, in the pioneering AUUG spirit of reporting on research into uncharted areas, this paper goes boldly where no one (not even an auditor) has gone before... and exposes the connection.

By the end of this presentation you won't know much more about sex, but you should be able to recognise at least the obvious lies and be qualified to develop a policy manual that can sit proudly alongside the Kama Sutra in your technical library.

So take a deep breath, turn up your hearing aids, reset your pacemakers and join me as we explore open systems connectivity from a different perspective...

...the connectivity between sex, lies and Open Systems policy manuals.

Sex

The advertising media has known for years that sex is a powerful sales tool. Sexual imagery is used by advertisers to sell everything from toothpaste to travel on the basis that sex attracts attention.

The computer media is no different, just more subtle.

Instead of using sexual images, the computer industry media concentrates on a relatively small group of 'newsworthy' subjects and gives them extensive coverage. The result? The selected subjects become sexy.

The trap? Sexy subjects are not necessarily relevant subjects.

In advertising, it is easy to recognise the 'make believe' nature of commercials. In the computing industry, spotting the make believe nature of many articles is a lot harder. The dividing line between fact and fantasy becomes blurred. Some people mistake news for information.

Just scan any major computer journal and count the articles on Windows 95, client/server computing, information super highways, and distributed management frameworks. It all sounds very impressive, but how many of us are actually going to be working with this stuff next week, next month or even next year? Some of it might be important in the future, but in many cases the subjects are just the computing industry's equivalent to gratuitous sex in advertising.

The media often fails to recognise that most of us have yet to reach the first turnoff to the diversion that leads to the roundabout that has been constructed to minimise the likely congestion on the soon to be announced on-ramp that will eventually connect us to the information superhighway (when someone actually works out what it is and where they are going to build it).

As a general rule, the sexier the subject, the less relevant it is likely to be to the 80% of computerdom that is living in the real world.

Such is the case with policy based management.

This is one of the least sexy, but one of the most relevant issues facing commercial open systems environments in the 1990s. And, surprise surprise, it is not on the Information Super Highway.

Nor will it benefit from gratuitous advertising by whip wielding, semi naked auditors, dressed in leather, draping themselves over the covers of policy manuals whilst extolling the virtues of management discipline.

No, it will not get much press coverage and it will not be advertised.

However, despite these media handicaps, it is essential the vital link between policy based management and effective systems management is recognised.

Policy based management may not be sexy but it is very, very necessary and, as the Open Systems market matures, its need will become critical.

So much for sex in relation to Policy Manuals. What about lies?

Lies

The Open Systems segment of the computer industry is changing rapidly and seems to generate more hype, hyperbole and jargon per head of population than any other area. The fact that it is hard to find two people with the same definition of 'Open Systems' illustrates the point.

Such a dynamic area of the industry provides fertile ground for the modern day carpetbagger to sow the seeds of confusion into the minds of the less cynical members of the profession.

Confusion can be spread in numerous ways such as:

- marketing campaigns and announcements that raise expectations but fail to deliver on promises;
- provision of well meaning but ill informed advice from experts, who aren't; and sometimes,
- through downright lies.

Whatever the source of the confusion, the result is an almost subliminal reassurance that new technology, new frameworks and emerging standards are the answers to effective systems management.

New technologies and standards are being held aloft with an almost fundamentalist religious zeal... "Follow the new technology, brothers, and all will be well..."

Now, whilst I hate to be classed as a heretic and will probably be sacrificed at the foot of the alter of new technology for blasphemy; this is not the case.

We are being manipulated.

We are being lied to.

The cart is being placed in front of the horse.

New technology is a vehicle that can facilitate effective systems management. It is not in itself the answer...

In order to deliver effective systems management, you will need to adopt a policy based management approach that utilises both existing and emerging technologies.

You will also need to separate the fact from the fiction...

...so, as the first step in our policy based management approach, let's dispel a few of the more obvious myths.

Myth 1: The problems are technical

One of the trends within the industry is a move towards much slicker and more extensive, US style advertising. A common thread throughout the advertising is the emphasis on using technology to solve the 'problem', whatever the problem might be...

We are bombarded by marketing broadsides extolling the virtues of the latest 'framework', the first 'totally integrated solution', the 'recognised' industry standard (not to be confused with last year's industry standard), the fastest, the most powerful, etc., etc....

Herein rests the first major lie that you need to watch out for. Despite extensive advertising to the contrary, technology alone will not solve your business problems.

Technology will assist greatly in the implementation of a solution but you need to ensure that you have adopted the correct policies and strategies in the first place. If you automate a mess, you get an automated mess.

Effective systems management is primarily a management issue.

Without management policies and operational procedures in place ahead of the technology, your efforts are doomed to failure, no matter how 'wizzy' and advanced the technology.

Myth 2: It is in the next release

This is probably the most commonly recognised myth of them all... but taken to new heights in the open systems market.

Because of the marketing 'smoke and mirrors' it is often hard to separate architecture from marketecture...

In many cases, vendor intentions have been honourable – it was just that the end result was lacking.

However, in some cases, vendors appear to have been downright misleading in order to secure future business. Products that have yet to be delivered are announced as being available on architectures that don't quite exist yet.

There is also a tendency for vendors to use the term 'integrated' when they actually mean 'interfaced'. Applying a user interface veneer does not constitute integration – despite adverts to the contrary.

The key point to note is that you cannot (and should not) believe everything you read or hear. It is safer working on the assumption that unless it can be referenced or 'touched' on the target environment, it probably doesn't exist... yet.

Myth 3: Emerging standards will solve the problems

There are many people who believe that the much heralded new architectures from 'standards' bodies and the various Open Systems consortia will deliver an effective system management solution that will solve the 'problem'.

Don't hold your breath.

Whilst many vendors have projected a public profile that supports open standards, the underlying force at work is vested interest, not effective systems management.

If open standards were ever to be realised, commodity pricing would result and vendor margins would be dramatically reduced. From a corporate perspective, this would be financial suicide.

Basic survival instinct by the major industry players will ensure it will not happen.

And even if vested interest could be set aside for long enough to allow a meaningful design effort to take place, system managers have grown tired of waiting. Problems need to be solved now and users are already turning to proprietary solutions from companies like Sun, HP and Tivoli.

Initiatives like DME which promised so much have failed as a result of pecuniary interest and corporate profits.

Whatever is salvaged from the DME initiative, it will be too little too late.

Myth 4: One size fits all

System managers are (again) turning to proprietary solutions to meet their needs.

However, despite a lot of advertising to the contrary, no single supplier will meet the needs of every installation.

Products will need to be maintained across multiple operating systems, multiple architectures, multiple network topographies and multiple terminal environments.

Some products also have kernel hooks to add to the complexity. This means that every time a minor operating system change takes place the software would need to be re-compiled. With most vendors upgrading their OS twice per year (at least) and more than 20 current variants of UNIX (that we know of) on the market, the logistics of maintaining cross version compatibility are staggering.

There are too many variables – no single proprietary technology will dominate.

In most cases, a client's selection of system management software will be based on the most appropriate set of key applications for their particular hardware/software environment and network

topography. For example, a small number of large central hosts, a large numbers of distributed (but autonomous) servers, huge networks of workstations, or most likely a combination of all or parts of the above.

Core applications would be provided by the 'key' supplier with other applications being interfaced (not integrated) to the core software.

Most of the key open systems software providers have targeted their offerings at one or more of the above topographies with varying degrees of success. Some vendors claim to handle all topographies, but these claims ring hollow when put into practice.

Hardware vendors can (and do) eliminate many of the variables by concentrating on support for their 'proprietary' open hardware. But this means you are locked in to their hardware.

Welcome to the real world of Open Systems, where some are more open than others...

The bottom line is that technologies will come and go but management principles will remain constant.

No matter what direction the industry takes, what new technology is adopted and what (if any) common standards emerge, a policy driven management focus will still be essential.

Which leads us to the main topic of this paper...
...how to develop an effective policy and procedures manual.

Policy Manuals Part 1: Why you need one...

In the inaugural edition of the *Network and Systems Managers Best Practices Report* (March 1994), the editorial stated:

"...effective systems management depends primarily on strategic planning and implementation of policy based management. You simply can't count on technology alone to see you through. You need to establish the policies and procedures governing your hardware, software and staff which will allow you to establish uniform centralised management without being inflexible. This is a daunting task, but it is achievable..."

"...marketing ploys have the effect of raising expectations; however, delivery is often 'in the future'. BPR attempts to cut through the noise by talking to as many users as possible...We'll tell you what people have found effective in practice."

Note the use of the words 'effective in practice'.

There is little point in having a policy manual that simply takes up shelf space and gets dusted off once a year when the auditors are on the prowl.

A policy based management approach works. It is a practical, solutions oriented way of facilitating effective systems management.

Apart from the fact it is good management practice, there are a number of compelling business reasons why a policy based management approach should be taken.

Cost Pressures

To a large extent, the move to open systems is being driven by 'downsizing' of corporate IT budgets.

In the proprietary environment, hardware and software costs represented around 60% of the total budget with the remaining costs being spent on staff and operations costs.

In the open systems environment, the situation is reversed with operations costs being the single biggest component of expenditure.

With the relatively higher % costs of operations management in an open systems environment, these costs will come under scrutiny and be targeted for on-going review and reduction.

Budget Growth

Expenditure on operations management of open systems is increasing far more rapidly than expenditure on hardware.

The rate at which operations costs are growing will need to be contained. To contain costs, operations workloads will need to be automated and delegated in a controlled way.

Complexity

The open systems environment is becoming increasingly complex.

In the area of storage management alone, it is estimated that:

- the amount of data stored on the average network is growing at between 50 and 100% p.a.
- the administration cost of managing a single UNIX server can cost up to \$35,000 p.a.
- a hard disk system that costs \$3/Mb to purchase and install will cost an additional \$8/Mb to manage
- the cost of recreating 20Mb of lost data is between \$15,000 and \$100,000 depending upon the application
- companies will spend \$300m on data management software in 1995 and \$600m in 1997
- the lost productivity cost of 1000 users each spending one hour per week backing up, and managing their files is over \$1m p.a.

The days of doing everything via cron and in-house developed shell scripts are gone (although some

administrators and system managers have yet to grasp this fact of life).

As open systems mature and proliferate, administrators will not be able to cope with the routine and repetitive work as well as the complex work.

Routine and repetitive work will need to be moved away from the administrators to enable them to concentrate on higher value activities.

A policy based management approach will be essential to ensure effective and secure systems management.

Policy Manuals Part 2: How to go about it...

The most successful methodology ever developed, but surprisingly one of the least known (it isn't taught in Universities because MBA courses would become redundant), is the seven "P"s.

This methodology states that:

Prior Preparation and Planning Prevents Piss Poor Performance

On the assumption that we will be standing on the shoulders of those that have gone before us (rather than their feet), we too will adopt a proven seven-step methodology.

Furthermore, if a seven-step approach works for Alcoholics Anonymous in reforming attitudes towards drinking, there is no reason why a seven-step approach should not be equally applicable in reforming attitudes towards policy based management in open systems.

So, let us explore our Administrators Anonymous seven-step guide to policy manuals.

Step 1. Define your management framework

On no you say, "Not another open systems framework!!!"...

But wait I say, this one is different.

Step 1 involves defining a management framework and as such, avoids portability and technical complexities.

However, it introduces the somewhat more esoteric problem of establishing a policy control mechanism that accommodates a particular organisation's (unique) political and cultural environment.

At least there are only 20 or so variants of UNIX...

In fact, the major challenge of implementing policy based management in any organisation lies in establishing a structured and disciplined management approach that will work for both business management, IS management and Operations staff.

Effective systems management is a two way process. Operational procedures must reflect business policy and business policies must be communicated to operational staff. They must also be reviewed and revised as the business and technical environment changes.

Establishing the appropriate management structure is a critical first step in this process.

As a broad guide:

- Business policies should be clearly defined by the management group and communicated to systems managers and operations supervisors
- Business policies should take into account corporate objectives and strategies, audit requirements and appropriate government regulations
- IS management policies should be clearly defined
- Business and IS management policies need to be translated into workable operations management procedures
- Operations management procedures should incorporate good existing practice where applicable
- Operations management procedures should be automated where possible and encapsulated to ensure their safe retention

Step 2. Define your management philosophy

The management framework establishes an agreed and structured basis upon which systems management tasks can be developed and continual reviewed.

The management philosophy establishes the underlying philosophical approach that will be taken to implementing the tasks.

When establishing your philosophy, it is worth noting some words of advice from the Best Practices Report:

"...the most significant development rolling out over the next 12 to 18 months is the distribution of management functions throughout the enterprise..."

It is inevitable that the changing Open Systems environment means your management philosophy should take into account the requirement to automate system management tasks and delegate them to non technical staff.

As a broad guide:

- routine and repetitive tasks should be documented and automated
- tasks should be delegated to the correct level within the organisation in a secure and controlled manner
- staff should only be permitted to perform the range of duties that have been specifically assigned to them
- all tasks should be audited
- the operations supervisor or systems manager

should be (automatically) notified if scheduled tasks are not carried out

Step 3. Prioritise the areas of need

Whilst most installations have similar systems management requirements, priorities will differ. Setting priorities will always be a subjective exercise. There is no prescriptive approach.

However, on the basis that experience is what you get when you didn't have it when you needed it in the first place...

...the best source of input to the prioritising process is to talk to people who know what they are doing, or to read about other people's experiences.

Ask them to talk about their worst nightmares, their greatest successes and their strategies for dealing with that most feared of all staff members... the Bastard Operator from Hell (BOFH).

Find out what works and what doesn't work. Learn how others have dealt with the political and cultural situations within their organisations. Most of all, listen and analyse.

You will not avoid a learning curve but you should aim to minimise its duration and inclination.

Some suggested sources of information are:

- personal experience
- experienced managers and operations supervisors
- hardware and software vendors
- documentation from other sites
- journals and library searches
- the Internet

Step 4. Establish your implementation strategy

Implementation strategies will vary from site to site depending on numerous factors such as:

- existing infrastructure
- financial resources
- staffing levels and experience
- network topography
- corporate culture

Single host installations will have relatively simple implementation strategies. Large distributed networks will require more complex strategies.

Prior to finalising the most appropriate implementation strategy, you should:

- audit your existing environment
- review emerging trends within the industry
- work out where you want to be
- identify how you are going to get there
- estimate what resources you will need

- identify likely constraints

The approach is analogous to undertaking an environment scan and a SWOT analysis (Strengths, Weaknesses, Opportunities and Threats), in corporate planning. You need to work out where you are now, where you want to be and how you are going to get there.

Whatever implementation strategy is adopted, it must be practical.

For example, there is little point in implementing a strategy of centralised backup management across a large network, if this will require robotic devices that you cannot afford.

Step 5. Define Manual structure

Each policy and its associated procedure(s) should be documented in a standard format that clearly identifies the key elements of the policy.

There should be a policy manual entry for each operations management topic.

The following (minimum) information should be documented for each policy manual entry:

- **Section Description**
- **Subject Topic** or central theme
- **Scope** The area or range that will be covered
- **Background** What the Company is trying to accomplish with the policy including any specific requirements or standards that need to be met and the strategy for implementation.
- **Policies** Specific policy details and management guidelines
- **Procedure(s)** Detailed step by step instructions on how a particular operation is to be carried out
- **Controls** Any specific controls relating to the procedure
- **References** Other references that should be consulted in conjunction with this manual entry
- **Updated** Date updated and by whom

Step 6. Document your policies and procedures

There is a famous saying that "Genius is 90% perspiration and 10% inspiration". Policy based management tends to adhere to this adage.

The inspiration stage is complete... it is now a case of perspiration.

Each policy should be progressively documented and implemented.

It is important to take the appropriate amount of time to ensure you are doing things right as well as doing the right thing...

Correct definition of key policies is essential. The costs of implementing new procedures to fix bad (or sloppy) policies can be horrendous.

And to assist you in your endeavours, it helps to remember that lesser known, but equally valid, saying...

"If you are going to eat an elephant, eat it in lumps..."

Step 7. Review and evaluate

The final step in our Administrators Anonymous guide is to ensure that the regular review and monitoring process, incorporated within the management framework, is actually implemented.

Because of the speed at which the open systems environment is changing, new policies will emerge, existing policies and procedures will need fine tuning and some policies will fall into disrepair.

The review process should be setup in a way that ensures its continuity. It needs to outlive the individuals involved in its establishment.

Conclusion

As the open systems market matures and the influence of mainframe 'downsizing' takes effect, attitudes will need to change.

Terms such as 'mainframe strength' and 'mainframe class' have already crept into the Open Systems vocabulary.

But what do these terms really mean?

Essentially they mean that organisations in the mainframe world have a strong strategic focus and a well disciplined, policy based approach to systems management.

In practical terms, it means that the days of relying solely on cron and in-house shell scripts are gone.

It is important to learn the valuable lessons gained from the mainframe world and to implement these practices within the Open Systems environment in a way that enhances rather than simply 'clones'.

One of the most valuable lessons to be learned is that a policy based management focus and its associated policy manuals are essential in any mature commercial computer environment.

So, as you ponder the subject of sex, lies and policy manuals, just remember that whilst policy based management may never be sexy, policy and procedures documentation is a lot like sex...

...when it is good, it is very good; when it is bad, it is better than nothing.

Background: UNIX. Live free or die!

by Andrew McArae

The growth and popularity of the Internet has been fuelled in a great part by the widespread acceptance of UNIX as an operating system; the incorporation of TCP/IP within the UNIX kernel by the University of California at Berkeley led to UNIX being the choice of Operating System for non-proprietary networked computers. The use of UNIX and the Internet also generated a major movement centered around freely available software. The availability of a widely available standard platform (at least at source level) and a ready means of distribution meant that thousands of developers in universities, commercial organisations and research departments could (and did) make significant contributions to an ever-growing body of free software, available to anyone with a modem or Internet access.

UNIX itself has been the beneficiary of much of the free software movement, with kernel enhancements, new utilities and tools all becoming part of the familiar UNIX landscape. Over the years that AT&T (and later USL) controlled the development and distribution of UNIX, users and software houses were often frustrated by the politics surrounding the UNIX system. In spite of this, UNIX growth in the marketplace continued, and was finally being considered as a mainstream contender in the commercial world. The UNIX source code, however, was still only available under strict licensing. This restriction generated a number of efforts to alleviate the situation, and create a 'free' UNIX. The original impetus of the Free Software Foundation over 11 years ago was to create a UNIX replacement that was totally unencumbered from source code distribution restrictions.

Meanwhile, on the Berkeley campus, continuing development was centering on improving the BSD version of UNIX, and on replacing USL proprietary sections of the system with new code that could be freely distributed. The eventual result of this development (besides a law suite from USL) was several releases of software that increasingly filled in the gaps left when the USL code was removed from a Berkeley UNIX distribution. At the same time, BSD UNIX was being ported to a number of different architectures away from the traditional VAX based BSD UNIX, such as Hewlett Packard workstations, Sony News workstations etc. One such port was undertaken by William Jolitz, who in the late 1980's began porting BSD UNIX to the Intel i386 PC architecture. An interim release of the BSD work became available and distributed via the Internet, known as the Berkeley Networking Release 2, or

Net/2 for short. Whilst not being a complete system, it did have most elements required for a functional system. It incorporated free software contributed from many sources, as well as code developed at Berkeley.

BSDI Inc. was formed expressly to take the Net/2 release, develop the missing portions for the Intel PC architecture and sell the result as an inexpensive supported product with source, named 386/BSD. Meanwhile, William Jolitz had continued with his i386 port and released a free distribution called 386BSD; the first release (0.0) was not considered stable, but a second release (0.1) in 1992 proved to be stable enough for thousands of people to obtain it via the Internet and load it on their Personal Computers.

Linux, on the other hand, is a clone of the UNIX system, and shares little (if any) of the same code as BSD UNIX. With Linux being originally written specifically for the i386, it is only now being reworked to be a more portable system. Linux is considered a more polished system, and somewhat more stable since it has originated from a clean slate.

For the first time, a fully functional BSD UNIX system was freely available with source code, and many people took the opportunity to work on the code to make it more stable and usable. With the Research Group at Berkeley being disbanded, there was no central body to co-ordinate the effort; instead the development effort was centered in the virtual world of the Internet, with people all over the world contributing to the free BSD version. Instead of a vendor phone number, mutual support was available via USENET, and anonymous file transfer archives replaced tape/CD distribution of new versions.

Two groups eventually emerged, each with different goals. One group distributed a version termed 'NetBSD', which operated on a range of architectures and had a relatively slow release cycle, whereas the 'FreeBSD' group concentrated on the i386 architecture, releasing new versions more often. Both versions were based on the Net/2 release.

With the availability of the final BSD release (4.4) from UCB, the way was clear to legally distribute the BSD UNIX versions that the NetBSD and FreeBSD groups had developed. With the recent release of FreeBSD 2.0, a system was available that was easier and faster to install than many commercial systems, and came with compilers, networking, utilities and complete source code to boot! NetBSD has released development versions for the Sun SPARCstation and MIPS systems. Work is proceeding on other architectures such as the DEC Alpha.

The future of free software and BSD UNIX seems to be assured, as well as the UNIX dream of Live Free or Die.

FreeBSD 2.0 is available via the Internet on freebsd.cdrom.com and a number of mirror archives, and is available on CD from Walnut Creek or Info-Magic.

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UNIX Tricks & Traps

Edited by Janet Jackson <janet@dialix.oz.au>

Thanks to all the people who have sent me stuff for this column. It's great to have a selection of contributions to choose from. So keep them coming! If I can't use your contribution immediately, I'll almost certainly be able to use it within a few months.

Please send your contributions, or suggestions for topics, to the above email address. If that's not convenient, fax or phone me on (09) 272 5061.

This month, Norman Gaywood describes `.forward` files, and the mail loops they can create. Greg Rose describes several useful tricks, including how to telnet to an SMTP port and look up an email address – finding out, among other things, whether the person's mail is being forwarded to another system.

How to stir up a storm with email forwarding

Norman Gaywood
Department of Mathematics, Statistics and Computing Science
University of New England
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When using the UNIX `sendmail` program to handle electronic mail (email), a file named `.forward` can be used to redirect your email to a computer of your choice. Usually this will be the computer you use the most. So any email sent to any of your accounts will always be found in one place.

You can also use the `.forward` file to redirect mail to multiple accounts. For example, suppose a machine has more than one administrator. Email to root may be redirected to each administrator.

So a `.forward` file lives in your home directory and can contain email addresses of the accounts that the email should be redirected to.

Most of our users have accounts on several machines. One user thought it would be nice to have their mail available on every machine that they logged into. To solve this, they decided to construct a `.forward` file that contained the address of each of their accounts.

Good idea? Not quite. Think about what happens here. Email arrives at machine A and the `.forward` file says to send it to machines B and C. Machines B and C get the mail and see that it should go to the other machines, which in turn send the messages on. And so it carries on.

If there were only two machines involved, you would get a loop. A sends to B which sends to A which sends to B, etc. The `sendmail` program detects such loops and

stop sending the message after about 16 bounces. With more than two machines, the problem is not so simple.

In the case at our site, there were six machines in the `.forward` files on each machine. Even worse, one of the email addresses in the file was incorrect. This causes the UNIX `sendmail` program to return your message with an `Address Unknown` error message. Of course, this message would then be forwarded to machine A, B, etc. It would also go to the bad email address causing yet another `Address Unknown` message.

As you can see, this would quickly build up so that hundreds of messages are flying around between the machines. We were lucky in that we spotted this very early and quickly removed the `.forward` files.

In the UNIX world, this is called a 'sendmail storm'. After we removed the `.forward` files it took several hours for the 'storm' to die down.

Remembering options, executing your prompt, and finding out with Telnet

Greg Rose
Sterling Software
<greg_rose@sydney.sterling.com>

UNIX Tip: I can never remember those pesky options

There are some wonderful tools under UNIX that I always seem to use for some purpose other than that which was intended. (Doug MacIlroy said that this was a proof of the correctness of the tool approach.) One of them is that if I can't quite remember a person's email address, it is much easier to telnet to the mail server and ask it than to send trial messages and wait for them to bounce. But you have to know the real name of the machine...

Now `nslookup` is a wonderful tool, but you have to get into it, remember to say `set type=mx` to get mail exchange records out, and (depending on your configuration) remember to end the mail domain name with a "." that is very counterintuitive... so what ends up happening is:

```
: /tmp; nslookup
Default Server: paganini.sydney.sterling.com
Address: 199.0.91.253

> set type=mx
> sterling.com
Server: paganini.sydney.sterling.com
Address: 199.0.91.253

sterling.com.sydney.sterling.com preference = 10,
mail exchanger = sibelius.sydney.sterling.com

[Damn... did it again...]
```

```
> sterling.com.
Server: paganini.sydney.sterling.com
Address: 199.0.91.253
```

UNIX Tricks & Traps

```
sterling.com preference = 10, mail exchanger =  
ns.sterling.com
```

```
><ctl-D>
```

Well, after doing this about 50 times in the last two weeks (no, not all for the same machine) I concluded that there would probably be CONFIGURATION OPTIONS on the `nslookup` command. (I can be a bit slow sometimes...)

So, after looking up the manual page, I found that there are such options, but that the chance of me remembering them was negligible. So, I embedded them into a shell script (or alias if that is what you want, but I find one line shell scripts easier to share around, and who cares about the efficiency).

Here, then, is `mxlookup`:

```
#!/bin/ksh nslookup '-set type=mx' '-set nosearch' $1
```

And an example use:

```
: /tmp; mxlookup qantel.com.au  
Server: paganini.sydney.sterling.com  
Address: 199.0.91.253  
  
qantel.com.au preference = 0, mail exchanger =  
gatekeeper.qantel.com.au gatekeeper.qantel.com.au  
inet address = 203.5.27.252
```

The point of this tip is not about `nslookup` particularly, but about the idea of embedding weird options into

little shell scripts, rather than having to remember them.

UNIX Tip: What was that weird prompt you use?

You may have noticed in my previous tip that my prompt is something like:

```
: /tmp;
```

Lots of people embed useful (or useless) information in their prompt strings. In my case it is the directory I'm in (or subdirectory of my home directory), and the machine name if I'm not on the normal one. But what is the ":" and ";" for? Why not use "\$" or "%"?

Well, the ":" is a do-nothing command to most shells. And the ";" is the command terminator. Everything in between is arguments to the ":" which are happily ignored when executed.

Executed? EXECUTED?? Am I really trying to tell you that I execute my prompts? Yep.

What this buys me is very simple. Under X Windows, in an xterm, I can triple click on a command line and have it select the entire line, then paste it with another click and have it executed. The prompt doesn't get in the way! It gets executed too, but who is to know or care? This is a major win for an uncoordinated person who uses small fonts.

UNIX Tip: What was that about telnet and SMTP?

Did you know that you can give telnet any old port number to talk to? This is most useful, in my experience, to verify people's correct mail addresses, or to find out who is on mail exploders. Here is an example:

```
: /tmp; mxlookup dialix.oz.au  
[...]  
dialix.oz.au preference = 900, mail exchanger = perth.DIALIX.OZ.AU  
  
: /tmp; telnet perth.DIALIX.OZ.AU smtp  
Trying...  
Connected to perth.DIALIX.OZ.AU.  
Escape character is '^]'.  
220-perth.DIALix.oz.au Sendmail 8.6.11/8.6.11/DIALix ready at Fri, 24 Mar 1995 15:45:44 +0800  
220 ESMTP spoken here  
vrfy janet  
250 Janet Jackson <janet@perth.DIALix.oz.au>  
quit  
221 perth.DIALix.oz.au closing connection  
Connection closed.
```

This is a contrived example, since I'm sending this article to Janet, I must have known who she was :-)

Note the extra argument to the telnet command. It looks up `smtp` in the `/etc/services` file or equivalent, and since it isn't the other end of telnet, it ignores protocols and just starts talking. Now I can type at the Sendmail at the other end (and note that they are running a good `sendmail` -- Eric will be pleased).

The `vrfy` command asks it to tell me what will happen to mail addressed to `janet`. Another useful command is `exn` to expand mailing list addresses (depending how they are implemented). I think `quit` is pretty self explanatory. Marshall Rose's (no relation) book *The Internet Message* is a great introduction to this stuff. This is also how you forge mail, but I ask you not to do that.

Background:

Open Systems and Open Networks

Phil McCrea <pmc@dit.csiro.gov.au>

The Internet has become so popular these days that its strong historical association with UNIX has all but been forgotten. In fact many PC users are surprised to learn that the Internet has any associations with UNIX at all. Let's look at a little potted history.

The Internet is the generic name for computer networks constructed using the TCP/IP communications protocol, which was created as a result of US Department of Defence funding during the height of the cold war. The original TCP/IP based network, ARPAnet, was created to link key military establishments together with redundant paths between sites so that the network would still remain operational even if several links were taken out as a result of a nuclear attack. It's sobering to think these days that the Internet is a legacy of the cold war.

The earliest version of TCP/IP linked together long forgotten systems such as TOPS-10 and TENEX. TCP/IP itself may well have disappeared along with these operating systems were it not for the fact that the Computer Science Department at the University of California at Berkeley was funded to develop a version of TCP/IP for their version of UNIX, known as the Berkeley Software Distribution (BSD) - which became the dominant version of UNIX in academic and 'workstation' circles. TCP/IP was actually shipped along with BSD UNIX, and as a result TCP/IP effectively became UNIX's standard communications software.

TCP/IP is a protocol - it is not software - and the interesting feature about it is that no-one owns it! It is not a proprietary protocol like Novell's Netware, or IBM's SNA. Since no-one owns TCP/IP, anyone can create TCP/IP software and sell it, without having to pay royalties. And this is the real secret behind the pervasiveness of TCP/IP: it is available from a large number of manufacturers, for every computer - including PCs and Macintoshes.

As UNIX became popular in Universities all over the world in the late 70s, campus networks were created using TCP/IP. It was not long before these campus networks were connected to each other, and so the Internet was born. The Internet is really a network of networks.

Proprietary networks of course do exist in large numbers, but the acquisition of a gateway enables these networks to communicate with the Internet. The

majority of PC networks use Netware, and a Netware-to-TCP/IP gateway enables PC users on a Netware network to appear to be on the Internet.

To put things in perspective, TCP/IP has brought the concept of openness to the communications world, much in the same way as UNIX has to the operating systems world. Because of this, anyone can now join the Internet, simply by arranging for a connection with a local Internet service provider, and acquiring the necessary software. It should be kept in mind that the local Internet service provider is, in reality, running a UNIX machine, which provides the services that are so essential for the Internet, such as the Domain Name Server (DNS), email software (SMTP), news software (NNTP), file transfer software (FTP), World Wide Web (WWW) software, and so forth. If an organisation has arranged its own Internet connectivity, then there will be a UNIX machine somewhere providing the interface between their local network and the Internet.

AUUG, of course, is totally committed to Open Systems, and our long held view that an Open System must be based on the UNIX operating system is now no longer in question. As AUUG members, we are also pleased that UNIX's concept of openness has moved to the networks area, and that TCP/IP, the standard UNIX communications protocol, is now the basis for that openness.

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A V I A C O M C O M P A N Y

AUUG Chapter News

From the Western Front

Janet Jackson, WA Chapter Sub-editor
<janet@dialix.oz.au>

Women of AUUG: Communicate!

Before I talk about WA matters, I want to mention a new mailing list, **auug-women**. This has been set up by Brenda Parsons and is open to all female AUUG members so we can discuss things of interest and pass on information.

It would be nice if there were enough women in AUUG so that we could find each other without having to have special mailing lists and BOFs, but we're still working on that. In the meantime, if you're a female member and would like more contact with other female members, send a message with body **subscribe auug-women** to **majordomo@auug.org.au**.

Farewell YAUN

WAUG has decided to do away with its local newsletter, YAUN (Yet Another UNIX Newsletter), which has begun to live up to its name.

For several years before WAUG became a full chapter of AUUG (previously, it was a separate group only loosely affiliated with AUUG), YAUN was most of our members' primary source of information on UNIX user group happenings. But now everyone is getting AUUGN, and poor YAUN has become rather emaciated. So the next issue (April) will be the last. As of June, our chapter email addresses, committee contact details and chair's column will appear in AUUGN instead; AUUGN editor willing! (you bet! – Ed.)

Summer Conference

WAUG didn't have a February meeting because of the Perth summer conference, which I couldn't attend because I was in another world (Canberra) attending their summer conference. From all accounts, the Perth conference was very successful. Bouquets to our organiser Adrian Booth.

Adrian says he has organised enough summer conferences and it is someone else's turn next year. We have decided we need an organising committee so all the work doesn't land on one person. So if you have any relevant skills—or are just good at meeting deadlines—please volunteer.

WAUG's March meeting

At our March meeting, one of our members, Paul Curtis of telinit 2 (that's his company name. Cute, eh?) spoke on X Evolution. (Paul seems to be in love with X even more than I am reportedly in love with Perl.¹) He

described a little of the history of X, but not too much, because everyone put up their hands when he asked who was familiar with X. He talked about more recent developments such as local window managers, and about a new product from Tektronix called WIND (or WINDD, I'm not sure) which allows applications running on a (slightly modified) Windows NT server to be displayed on an X terminal.

Paul's style is laconic and rambling, and his talk couldn't really be described as a sales pitch, even though part of it did describe a product, and even gave prices.

Listen WAUG people, I am sick of having to summarise the meetings myself, and as you can see, I'm not too good at it. Surely you don't all have writer's block? So after the next meeting, send me some email summarising and/or reviewing the talk, and the food, if you like.

Speaking of the food. At the March meeting, the venue (the Blue Note tavern) decided they were unable to cater. However, they would not let us order in pizzas, so we took our business across the railway to the Union Bar and Cafe, who were quite happy about it. The pizzas were a lot better than the Blue Note's usual catering. The committee have decided never to use the Blue Note again (we would have been at the Freeway, but someone else had already booked it). We also think that a pizza night now and again (perhaps at Christmas) would be a good thing.

WAUG, the WA Chapter of AUUG, meets at 6pm on the 3rd Tuesday of each month. Our meeting organiser is Mark Baker, <waug-meetings@uniwa.uwa.edu.au>, (09) 491 6081.

Canberra Chapter

The INTERNET Project

If you are an AUUG member in the Canberra Chapter you can get e-mail and news access to the Internet, and there is no cost (so long as you remain a financial member). This is provided by a dialup service which has been recently updated and has a direct IP connection to the Internet. Full IP access to the Internet can be obtained at extra cost (\$120 for 400 hours, approximately). If you are interested in this service, please contact John Barlow (work: 249-2930) to have a brochure posted out to you.

Kirk McKusick T-shirts

T-shirts for sale! We still have some "Kirk does Oz" T-shirts left from when Kirk McKusick did his tutorial tour of Australia last year. Contact Lawrie Brown (lpb@auug.org.au, work: 268-8816) for details.

1. The latter is not true. I am actually in love with a soft toy, Larry the Camel, who was given to me at my Perl tutorial at the Perth conference, and who is looking at me rather suspiciously right now. :-)

Internet Security Firewalls Tutorial by Brent Chapman

AUUG is planning to fly Brent Chapman in from the USA to give a one-day tutorial on Firewalls in each capital city. Brent will be in Australia between the 4th and the 14th of May, and the one-day tutorial will probably cost around \$300 per member (we are trying to reduce this cost). The dates have yet to be picked and confirmed. The tutorial is a one day introduction to the design, construction and operation of Internet Firewall security systems.

Dates

April 11th General Meeting TBA

May TBA Tutorial on Firewalls by Brent Chapman

May 9th General Meeting TBA

June 13th General Meeting TBA

Meetings Organiser, Canberra Chapter of AUUG Inc. Mr. Peter Davie, 2480430 (work) 2480468 (fax)
pdavie@auug.org.au (email).

Queensland Chapter: Summer Technical Conference

Mark White <mwhite@pacstar.com.au>

The Queensland Chapter's Summer Technical Conference is being held on Thursday April 17, from 8:00am at The Gateway Hotel in Brisbane.

Speakers include:

Keynote Address

Ian Reinecke, Chairman, Queensland Information Policy Board

Computer Security and the Internet
Catherine Allen, AusCERT

An Overview of IPv6, the Next Generation IP Protocol

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Berry Goodheart, Tandem

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Renato Iannella, Distributed Systems Technology Centre

Mini SQL: A Lightweight Database Engine

David Hughes, Bond University

Firewalls

Andrew Nash, Digital Equipment Corporation

An Experiment in the Integration of Configuration, Version and Development Control

Owen Traynor, University of Queensland

Internet Security

Pauline van Winsen, Uniq Professional Services

The conference secretariat can provide answers to any queries you may have regarding conference papers or speakers. Contact them at:

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- a copy of your article

Submission guidelines

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 only submits 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.

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 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. ❖

AUUG Business



AUUG Management Committee Summary of minutes of meeting 27th February 1995

Location: AUUG Business Office, North Sydney.

Present: Phil McCrea, Glenn Huxtable, Frank Crawford, Michael Paddon, Lucy Chubb, Rick Stevenson, Stephen Boucher, Peter Wishart.

Apologies: Chris Maltby.

Guests: Catrina Dwyer, Wael Foda (part only).

1. Matters Arising

1.1. AUUG96

Vic govt has some money for multi-media from Federal Govt. SB to write a letter seeking Vic govt support for AUUG96.

1.2. AUUG95

PM written to ACS/-NSW and IREE inviting them to participate in AUUG95. ACS-NSW delighted to be involved. PM will also write to ATUG.

1.3. Web

Motion: That the management committee records a vote of thanks to the Canberra Chapter for getting AUUG on-line. **Moved:** MP/GH. CARRIED.

2. Presidents Report

Note: At this point the committee voted its thanks to Catrina Dwyer for her efforts over the past 14 months as AUUG Business Manager.

Over the past few months there have been a number of hiccups for AUUG:

- CD leaving
- AUUG95 programme chairs resigning
- entire AUUG95 programme committee has not been very active

It was noted that the AUUG96 programme chair position should be advertised widely. It was a position of high esteem and should be able to attract good people. It should be possible to meet candidates at AUUG95 and make an announcement at AUUG95.

There was discussion on the need to separate the position of programme chair from the need for high profile people on the committee.

3. Treasurer's Report

We had a sound financial position currently. Details circulated of financial position, also budget. AUUG95 summer conferences nett cost \$3K. ACMS have presented a new set of financial accounts for AUUG94. Now have an expected profit of \$15K. Other big bills coming in soon are AARNET (20K), and chapter payments (17K).

4. AUUG95

It has been proposed to combine AUUG95 with the WWWWW (W5) conference being organised by Charles Sturt Uni (CSU). The W5 conference organiser will be in Sydney on Monday. Wants to sign an MOU. ACMS circulated budget for AUUG95 and a budget for combined AUUG95+W5. Need to charge exhibition entry to control access. Delegates free, use trade passes. Control general public access.

W5 conference does not have members, so a member rate at the conference raises issues. Suggest to CSU that they select a group of people to get their member discount. It was agreed that AUUG members will get a discount. Members \$450, others \$550.

AUUG and W5 should get equal billing in any publicity. CSU has put up a Web page for PR. We should invite CSU to have two members on the conference committee. Need to have 2 programme co-chairs.

5. New Business Manager

Discussion on getting a replacement business manager. Noted that in the 8 weeks before the conference the job was always full-time. Options for part-time roles needed to consider this. PM to post an ad for the business manager in aus.org.au and mail chapters.

6. Brent Chapman Tour

5 cities to be involved in Chapman tour: Syd, Can, Mel, Bris, Per. GH to manage arrangements.

7. New Membership Cards

Drafts of the new membership card layout were distributed. It was noted that the membership card

must have e-mail address, membership status, and expiry. It was decided to go with the landscape format card using the second (graduated) colour scheme. It was decided to include signature plates. PW to organise details of card.

Motion: That all existing members be issued with the new membership card as part of the July 1995 renewal processes. **Moved:** MP/FC. CARRIED.

8. Secretary's Report

There was now a Web page for AUUG on auug.org.au based on FAQ.

Contact had been received from Stephen Bittinger re forming a Tasmanian chapter. He was disappointed that Tassie had not been able to be included in the Brent Chapman tour and this together with highly successful visit by Kirk McKusik and Gene Spafford had convinced him it was worth seeking a chapter in Tassie. He was starting the process of forming a chapter in Tassie.

The Canberra Internet service was up and running. Some other chapters were also now using the service for mailing lists and Web pages.

Constitutional amendments should also be considered for the elections. Issues to be covered:

- membership dates brought into line with current practice
- institutional membership issues
- immediate past president role

9. Publications

OSR - Brenda Parsons is managing our input temporarily. First article has appeared. Need someone to take over.

10. IIR Conference

IIR conference on UNIX and Open System 28-29 June. AUUG asked to provide speakers and case studies. We should notify members of opportunities to speak etc. We should make sure we get something back from IIR, not just discounts for members.

11. Networks Subcommittee

AARNet arrangements with AUUG not going to change until end of year. AUUG has agreed to act as a manager for the emu.id.au namespace, will be handled through Canberra chapter. Networking subcommittee was actioned to get together information on the Internet and connection to it. About 4 books being published on this issue in next few months. AUUG should consider supporting these.

12. Next Meeting

The next meeting will be on Friday 28th April 1995 in the North Sydney office.

AUUGN Submission Guidelines

Please submit all articles, comment and notices for publication in AUUGN in the following forms:

Text

- ASCII format
- Text left-aligned, and unjustified
- Blank line between paragraphs
- If used, please put footnotes, notes and bibliography at the end of the file

Images

- Please provide images, diagrams and illustrations as separate files
- Make sure that your text contribution indicates where graphics should go in the contribution
- We can read/convert most graphics formats; make sure that if providing images as Postscript, that you use Encapsulated Postscript (EPS) format
- If the above is not possible, small hardcopy illustrations are acceptable

Where to send your submissions

- E-mail your submission to auugn@auug.org.au with AUUGN submission in the Subject line, or
- Post it on a disk (DOS formatted is preferable, though both MAC and UNIX disks are also accepted) to

AUUGN Submissions
PO Box 366
Kensington NSW 2033

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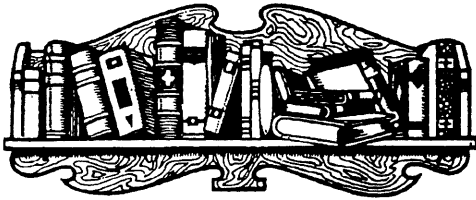
Book Reviews

Frank Crawford, Sub-editor
<frank@atom.ansto.gov.au>

Welcome to another edition of AUUGN Book Reviews, this is a mixture of reviews of new books and bit of a cleanup of some outstanding books. The new books include reviews of "Exploring Expect" from ORA and "Internetworking with TCP/IP, Vol II" from Prentice-Hall, while the "older" books cover such topics as High Performance Computing, SCO Unix and Oracle.

I've recently distributed a stack of new books, which should cover us for the next few months, however, I am expecting a few new releases to appear. 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.

Finally, you are likely to see some of the reviews appearing online in the near future, as we put sections of AUUGN on our WWW page at <http://www.auug.org.au/auug/auugn>.



Exploring Expect

by Don Libes
O'Reilly & Associates 1995
ISBN to be announced
526pp + index
Reviewed by Janet Jackson
<janet@dialix.oz.au>

"The only way to play rogue better is under the debugger!"
(Page 138)

Expect is one of the reasons Tcl [1] has become popular. It's a Tcl extension, providing commands to automate talking to software that has been designed to be interactive - software that's good at talking to humans, but not to other programs.

A typical application of Expect is a script to automate interaction with network utilities like FTP, telnet or rlogin. One of the examples in the book is a script to get an RFC (Request for Comments - an Internet standard or information document) via FTP, given the RFC number as an argument. Another idea is a script

to expand an email address by telnetting to a host's SMTP (Simple Mail Transfer Protocol) port. Both of these are things you might frequently do by hand.

Among other things, the book suggests using Expect to translate input. You could set up vi-style key mappings that you could use anywhere, rather than only in vi. Or you could implement a Dvorak keyboard.

Extending Tcl with both Expect and Tk [1] makes Expectk, giving you the high-level graphical interface toolkit of Tk as well as the interaction power of Expect. Expectk is good for adding graphical interfaces onto existing command-line applications, among other things.

Exploring Expect has been written by Don Libes, the author of Expect. It's the first book I've seen on the subject.

It's a tutorial introduction, not a reference manual. It starts with basics and progresses gently to esoterica. Most of the concepts are introduced by example, and many of the examples are useful, not contrived. It's the sort of book that's best read with a terminal handy - especially if you want to try the exercises at the ends of the chapters.

Chapter 1 is a brief introduction - good, but not enough for a fast "getting started".

Chapter 2 introduces Tcl. This may make you impatient, but programming in Expect is programming in Tcl, so you need to know about it. This chapter is a clear programmer's introduction to Tcl's basics. It's terse, but still skimmable, especially if you are used to languages at this level. Perl programmers will find many of the concepts familiar.

The next two chapters get you using Expect for typical basic tasks, like FTPing RFCs.

Chapter 5 explains regular expressions and how to use them in Expect. Chapter 6 goes deeper into Expect's pattern-matching, including when to use Tcl list and string commands instead of regular expressions.

Chapter 7 is on Expect's debugging facilities: how to make it print out everything it does, and how to selectively turn off this output or split it into several files.

Chapter 8 is on interacting with a user and a process at the same time, previous examples having dealt with one or the other.

Chapter 9 is on "Expect as a program" - using #! to make executable programs, using the argument list, and Expect's command line flags.

Chapters 10-17 contain lots of details and examples on different areas of Expect, such as how to talk to more than one process at once; how to handle signals; and how to run safely in the background.

Chapter 18 gives more information and advice on debugging, including a Tcl debugger and details of various debugging techniques.

The rest of the chapters are on more esoteric topics that not everyone will be interested in, such as Expectk; using Expect from C and C++; and combining Expect with other Tcl extensions.

Chapter 20 lists and explains three long examples: a program to encrypt an entire directory; a program to transfer files using Telnet; and tknewsbiff, which uses Expectk to provide a scrollable list of newsgroups containing unread articles.

The last chapter (23) is on miscellaneous matters, such as random numbers, that didn't fit elsewhere.

The only appendix is a useful-looking reference list of Expect's commands and variables.

Exploring Expect seems to be aimed at the ordinary UNIX user who is trying to get more out of the system. Libes expects his reader to be comfortable working with the UNIX shell, but not necessarily to be a power user. Where it helps to understand how the plumbing works - for example, how the kernel buffers output - Libes explains it.

Libes' style is extremely readable. He explains both Expect and UNIX concepts in a clear and patient manner, without being at all condescending. Libes' descriptions of signals and zombie processes are as understandable as anything I've come across. He also manages to transmit his enthusiasm for his topic, but unlike some authors, does not become irritatingly witty.

The book is not all hard facts. It contains a good deal of valuable advice and rules of thumb for writing stylish, readable, bugless Expect code. Libes emphasises that it takes practice and experience to know how much time to spend perfecting one's code.

In places, Libes sets a bad example. In Chapter 7 there is an example that uses a clear text password as a command-line argument! Libes does explain that this is insecure and that later he will show how to handle passwords securely. But what if the reader never gets to later? And the password is a dictionary word! Given that the reader may be thinking of him as an expert in all things UNIX, Libes ought to know better:

Also, one of the exercises in Chapter 7 describes a "paranoid" systems administrator who will only let you have the root password if you give him or her a log of everything you use it for. Letting a non-systems administrator—UNIX expert or not—have the root password at all is asking for trouble, but occasionally it is unavoidable. In such a situation, requiring a log is prudent, not paranoid.

If you are an experienced UNIX programmer, the explorative, tutorial style of the book can be annoying. It is designed to be read sequentially, and Libes

doesn't give you any help in deciding which parts to skip. The upshot is that you have to read the whole thing. The chapter on regular expressions is a fine explanation, but is a bit painful if you already know regular expressions and just want to find out if Expect's implementation has any extensions or unusual ways of doing things.

The book is supposed to be a tutorial, not a reference. Nevertheless, it would be better if it had symbols in the margin telling you which parts are esoteric, hard, or nonessential.

Exploring Expect lives up to its name. It is a tutorial that shows the ordinary UNIX shell user how Expect can help them get more out of the system. If you're a power user, you may find it rather slow and sequential, but it is still worth buying if you want to learn Expect and add a powerful new tool to your arsenal.

[1] John K Ousterhout, "Tcl and the Tk Toolkit". Addison-Wesley 1994. ISBN 0-201-63337-X.



High Performance Computing

by Kevin Dowd
O'Reilly & Associates, Inc., 1993
ISBN not supplied

Reviewed by Jagoda Crawford
Australian Nuclear Science and Technology Organisation
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In the last few years we have seen a number of advanced features appearing in workstations, such as pipelines, RISC, long instruction words, and multiprocessing support. Some of these features had previously been used by supercomputers, however, in an effort to increase the performance of workstations we are seeing more of them appearing in desktop computers. This book presents an overview of modern computer architecture and software techniques to obtain optimum performance. It covers such things as vector versus scalar performance, parallelisation and memory hierarchy. Benchmarking and portability issues are also covered, with references to various industry benchmarks and hints on programming style to ease porting problems. High Performance Computing is aimed at people who are interested in computer performance and those that are involved in evaluation and/or purchasing of machines.

The material is presented in four major sections:

Modern Computer Architecture Methods used at the processor level to improve performance, e.g., CISC, RISC, pipelining, superscalar processors,

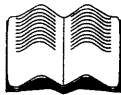
superpipelined processors and other advanced features. Fast processors require improved memory bandwidth to make the data available for processing. Hierarchies of computer memory are covered, e.g., caches and virtual memory and methods used to improve access.

Porting and Tuning Software Overview of optimising compilers and compiler techniques for improving code performance. Once this is summarised, coding style, assisting code readability, portability and optimising compilers is covered. As the author states: clear expression of intention benefits both the compiler and humans maintaining the code. Finding porting problems, timing and profiling using such utilities as *prof*, *gprof*, *lprof* is covered. This is followed by describing parallel methods (i.e., both vector and multiprocessing).

Evaluating Performance An overview of industry benchmarks (e.g., *Drystones*, *Linpack*, *Whetstone* etc.) is presented and a thought provoking chapter on running your own benchmarks.

Parallel Computing Classes of parallel architectures, SIMD, MIMD, shared and distributed memory and software concepts for this class of machines.

I enjoyed reading *High Performance Computing*, the concepts are introduced in a logical and easy to follow style. It is useful both for introduction purposes and as a reference and although published in 1993, it is still current. A list of common processors is included in the book. This list will date as new processors become available, but I hope that it will be updated in latter editions.



Internetworking With TCP/IP Volume II: Design, Implementation, and Internals (Second Edition)

by Douglas E. Comer & David L. Stevens
Prentice Hall,
612 Pages
ISBN 0-13-125527-4

Reviewed by Stephen Rothwell
Software Development Centre,
NEC Information Systems Australia P/L
<Stephen.Rothwell@pd.necisa.oz.au>

I came to this book with some high expectations, and in general, I was not disappointed. As the cover illustration indicates, and the Preface states, this book puts the TCP/IP protocols under the magnifying glass. I suspect that the first volume of the series

would be better for an overview of the protocols and the third volume for application programmers.

Internetworking With TCP/IP Volume II is essentially a guided tour through the Xinu TCP/IP code, and as such, covers the design and implementation decisions in great detail. For understanding exactly how the protocols should behave, this is ideal. When choices of implementation have been made - sometimes for simplicity, sometimes not - the alternatives are discussed, as are the requirements of the protocol specifications.

Reading this book cover to cover is probably not recommended, as the amount of information can be overwhelming. This is a reflection on the complexity of the protocols and the interactions between them. It is probably more useful to dip into it over a period of time. For this purpose, the two appendices are very useful. Also, There are also many references to the RFCs and other defining documents which can usually provide even more detail, if necessary.

Contents Outline:

Chapter 1	Introduction and Overview
Chapter 2	The Structure Of TCP/IP Software In An Operating System
Chapter 3	Network Interface Layer
Chapter 4	ARP
Chapters 5-9	IP
Chapter 10	UDP
Chapters 11-16	TCP
Chapter 17	Socket-Level Interface
Chapter 18	RIP
Chapter 19	OSPF
Chapters 20-22	SNMP
Chapter 23	Implementation In Retrospective
Appendix 1	Cross Reference Of Procedure Calls
Appendix 2	Xinu Functions And Constants Used In The Code
Bibliography	
Index	

Each chapter begins with a theoretical discussion of the topic, which is then followed by the actual

implementation. This makes each chapter fairly well self contained for browsing.



ORACLE Performance Tuning

Peter Corrigan and Mark Gurry
O'Reilly & Associates, 1993
605 pages
ISBN 1-56592-048-1

Reviewed by Mark White
Pacific Star Communications Pty Ltd
<mwhite@pacstar.com.au>

Few O'Reilly publications disappoint; in general they become well-thumbed reference tools, the essential office companion for practitioners in an open systems environment. It's not surprising then, that *Oracle Performance Tuning* lives up to this expectation.

System tuning exercises usually end up being a collaborative effort between operating system and application experts. In most DBMS environments, where much of the complex data management intricacies are hidden behind SQL libraries or 4th Generation Languages, the importance of writing efficient working applications often gets left behind in the rush to push just a "working" application out the door. It's only later, once deployed in a large database environment, that performance problems show up - and invariably it's the harried System Administrator taking the lion's share of the blame.

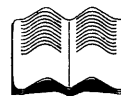
With this in mind, Corrigan and Gurry have taken a multi-stage approach to discussing the issues behind tuning an Oracle DBMS environment. There are seven sections in this book: an overview, a comprehensive set of appendices, and a separate tuning guide for each of the following groups: planners and managers, designers and analysts, programmers, database administrators, and finally system administrators. The overview warns that it's not necessary for every group to read the entire book, rather they should understand their respective sections and gain an appreciation for the impact they could make with regards to the overall performance of the system.

The section for designers and analysts discuss the need for appropriate data normalisation, and correct index creation. Developers are pointed towards tuning PL/SQL and SQL*Forms programs through reducing cursor overhead, memory conservation, the choice of the right driving table for SELECT statements, and using SQL*Forms libraries. An entire chapter is devoted to the selection of a locking strategy, often a

misunderstood process in DBMS application development.

The section for database administrators guides the tuning of memory, tablespace creation, creating indexes, and describes the various diagnostic and tuning tools available to assist administrators to tune more effectively. The section for system administrators, rather than concentrating on any one of the multitude of Oracle-supported platforms, discusses general issues, such as long-running jobs, client/server environments, capacity planning. Finally, the appendices cover Oracle Version 7, tuning Oracle Financials, a "hot-tips" chapter, and the dynamic performance tables.

No single volume will ever become a panacea for every Oracle installation's performance woes. This book, however, will go a long way towards helping design, build, and manage more efficient systems, and should be a mandatory accessory on every Oracle site.



SCO Open Desktop / SCO Open Server Graphical Environment Administrator's Guide

Reviewed by Tony Beresford
Unix/Data Administrator
Western Mining Corporation - Leinster / Mt Keith
<tonyb@leo.dialix.oz.au>

This book—one of a set of three manuals for SCO Open Desktop and SCO Open Server systems—focuses on the administration of the graphical components. The Graphical Environment of SCO Open Desktop and SCO Open Server consists of the MIT X Window System server, the OSF/Motif Window Manager client and the SCO Desktop client. An overview of each of these components is provided, along with the basics of customising resources and characteristics to suit the preferences and environment of the user. Practical guidelines for the administrator help clarify the tasks involved in configuring the Graphical Environment.

The second chapter looks at the startup of the Graphical Environment using scologin and scosession, both on the console and on X terminals. The purpose of each configuration file, and the environment variables that may be defined to alter the startup of the X server, are clearly described.

The third chapter presents the steps involved in running remote clients, and touches on some of the

security issues associated with running remote clients, and granting access to your display to other hosts.

From the fourth chapter, the book becomes more of a reference manual, with chapters providing a reference on an aspect of the Graphical Environment, followed by several describing the specific steps involved in performing the customisation required. The first of these reference chapters details the resources that define the appearance and behaviour of clients and the structure of the resource database. Subsequent chapters detail the task of configuring these resources to personalise the colours, fonts, window sizes and locations, cursor size and appearance which make up your display. Complete examples at the end of each chapter tie together the concepts and procedures presented.

The next reference chapter describes how to control desktop behaviour with rules, rule files and object scripts. The way in which objects may be used to customise the appearance of applications, and the use of rules to customise the mouse actions or specify icon names and locations is described in detail. This includes the precedence and scope of the different rule files (local, desktop, dynamic, user & system) and the structure of these rule files. Again, subsequent chapters provide the tasks involved in using these concepts to actually customise the Graphical Environment with clear examples to follow. Pitfalls are also highlighted to the administrator.

The Deskshell script language which offers commands and control structures—similar to the Bourne shell but able to execute them more rapidly—is used to specify actions to be performed in rules or object scripts. The use of the Deskshell language is described with an annotated example for the administrator to follow.

The last reference chapter is devoted to the configuration of the Motif Window Manager. Subsequent chapters describe in detail how to customise menu, button and key bindings to suit the user requirements. The last few chapters are for advanced administration of mouse, keyboard and video systems which require specialised configuration.

The two appendices provide a clear, detailed reference of the resource options for both the Motif Window Manager and the SCO Desktop client

This book is designed to be used as both a reference and a step by step guide to performing the tasks required to customise the SCO Graphical Environment for any given need. The reference chapters are clearly written and the specific task chapters provide any further detail of which an administrator must be aware complemented with useful examples. Even with minimal exposure to SCO Open Desktop or SCO Open Server I have found the book a very useful guide to the graphical and networked environment in which we work today.

Product Information:

Mainframe-level security for UNIX systems

Andy Bugal, XCP Security Systems P/L

The move towards distributed computing and open systems has made it easy to access IT resources. Unfortunately, the more accessible resources are, the greater the risk of security breaches.

Due to lower cost and open operating systems, UNIX workstations/networks are capturing a growing share of the MIS budget. However, security tools and mechanisms on UNIX platforms have traditionally fallen short of those available on mainframes such as RACF and ACF/2, largely due to the distributed nature of UNIX systems. For most sites, the default security provided by UNIX is inadequate. Unless an awareness of data security is created, and appropriate security tools are employed, accessibility can lead to unintentional or deliberate security breaches – such as unauthorised access to information and the modification or destruction of data.

XCP Security Systems have recently released a product that resolves many of these inherent security problems. Security for Open Systems (SeOS) provides mainframe-equivalent access control and security for HP-UX, Sun/SOLARIS and AIX. B1 level (Orange Book) compliant features are also included as standard.

The structure of SeOS is similar in concept and operation to mainframe access control products, allowing information centres to adopt current security standards and procedures, thereby reducing both learning curves and implementation time.

Options to the SeOS base module include single-terminal administration of every user and security module in the enterprise (including mainframes) via an OSF/Motif graphical interface; and single sign-on across UNIX or non-UNIX platforms such as VTAM networks. SeOS uses the KERBEROS protocol, so that passwords are not transmitted in the clear.

For more information, contact Andy Bugal at XCP Security Systems Pty. Ltd. Tel.: (03) 550-0835 or Fax: (03) 562-9839

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 Hong Kong Jockey Club Systems (Australia)
 Pty. Ltd.
 I.P.S Radio & Space Services
 IBA Healthcare Pty. Ltd.
 IBM Australia Ltd.
 Ideas International Pty. Ltd.
 Independent Systems Integrators
 Informatel Online
 Information Technology Consultants
 Informed Technology
 Insession Labs Pty. Ltd.
 Insurance & Superannuation Commission
 Intelligent Network Development
 Internode Systems Pty. Ltd.
 ISR Group Ltd.
 James Cook University of North Queensland
 Joint House Department
 JTEC Pty. Ltd.
 Keys 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 Tech. Services
 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 Communications Australia
 Motorola Computer Systems
 MPA International Pty. Ltd.
 MUA Pty. Ltd.
 Multibase Pty. Ltd.
 Multiline BBS
 Multiuser Solutions Pty. Ltd.
 National Library of Australia
 National Resource Information Centre
 NCOM Services
 NEC Australia Pty. Ltd.
 Northern Territory Library Service
 Novell Pty. Ltd.
 NSW Agriculture
 NSW Public Works, Information Services
 NSW Teachers Federation Health Society
 Object Design Pty. Ltd.
 Object Oriented Pty. Ltd.
 Object Technology International Pty. Ltd.
 Office of State Revenue
 Office of the Director of Public Prosecutions
 ONA
 Open Software Associates 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.
 Pyramid Data Centre Systems
 Qantek
 QLD Department of Transport
 QLD Electricity Commission
 Quality Bakers Pty. Ltd.
 Quality By Design Pty. Ltd.
 Redland Shire Council
 Rehabilitation Tasmania
 Renison Golffields Consolidated Ltd.
 Rimbina Pty. Ltd.
 Royal Melbourne Institute of Technology
 SCEGGS Redlands Ltd
 Sculptor 4GL+SQL
 Security Mailing Services
 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
 Specialix Pty. Ltd.
 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
 Steelmark Eagle & Globe
 Sterling Software
 Storage Technology of Australia
 Strategic Information Technologies Pty. Ltd.
 Sunburst Regency Foods Pty. Ltd.
 Sydney Electricity
 Sydney Ports Authority
 Systemk Corporation Pty. Ltd.
 System Builder Development Pty. Ltd.
 Systems and Management Pty Ltd
 Systems Development Telecom Australia
 TAB of Queensland
 TAFE NSW, Information Systems Division
 Tandem Computers
 Technical Software Services

TechNIX Consulting Group International
 Telecom Australia
 Telecom Australia Corporate Customer
 Telecom Payphone Services
 Telecom Research Laboratories
 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
 Unidata Australia
 Uninet Consulting Pty. Ltd.
 Unisys Australia Ltd.
 University of Adelaide
 University of Melbourne
 University of New England
 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.
 Wesfarmers Limited
 Western Mining Corporation
 Westrail
 Woodside Offshore Petroleum
 Workers' Compensation Board of QLD
 Workstations Plus
 XEDOC Software Development Pty. Ltd.
 Zircon Systems Pty. Ltd.
 Zurich Australian Insurance

**Is your organisation an
 Institutional member of
 AUUG?**

Institutional membership gives your organisation:
 a vote in all AUUG elections & ballots;
 membership rates to all AUUG national and
 chapter activities for the primary contact and up
 to two additional representatives; and *two* copies
 of each issue of **AUUGN: The AUUG Journal**.

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 or 1 800 625 655 • 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.

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 air mail \$ 60.00

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.

TOTAL REMITTED: AUD\$ _____ (Cheque, or money order, or credit card)

Signature

Date

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: _____

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

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

Signature

Title Date

Over for Institutional Membership

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 or 1 800 625 655 • 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.

We, _____
(Company Name)

do hereby apply for:

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

TOTAL REMITTED AUD\$ _____
(Cheque, money order, or credit card)

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.

We understand that we will receive two copies of the AUUG newsletter, and may send two representatives to AUUG sponsored events at member rates, though 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: _____

Tel: BH _____

Fax: BH _____

email address: _____

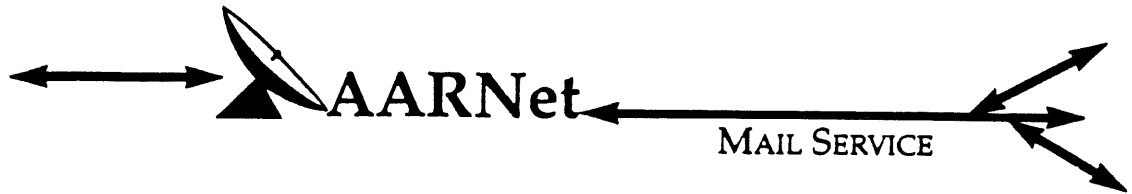
AUUG Secretariat Use

Date: _____

Initial: _____

Date processed: _____

Membership # _____



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).

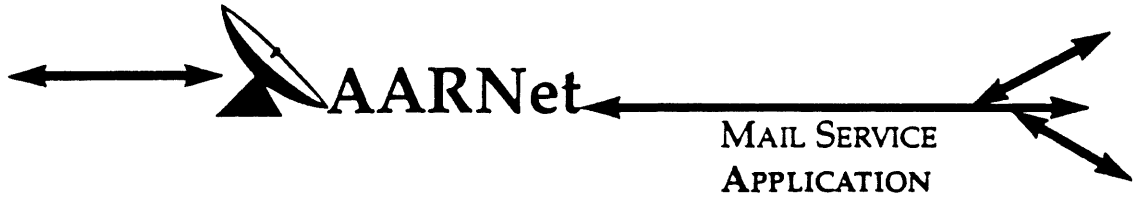
The fee is intended to cover use of AARNet bandwidth for your network traffic. Registration with AARNet, however, provides **ONLY** the registration of your address in worldwide address tables - your site will be unreachable without this registration. The fee does **NOT** cover the costs involved in 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.

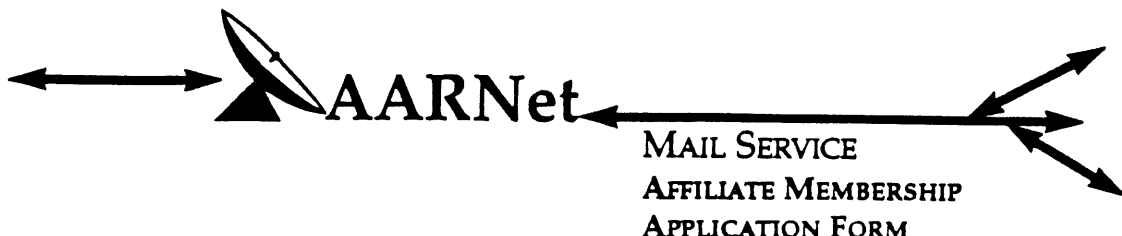
I understand that the AVCC may consult the recorded logs of my organisation's usage of AARNet facilities for 1990, and determine that I am ineligible for registration under the terms of the agreement between AVCC and AUUG Inc. I understand that AUUG Inc will invoice my organisation for this service for 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.



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: _____

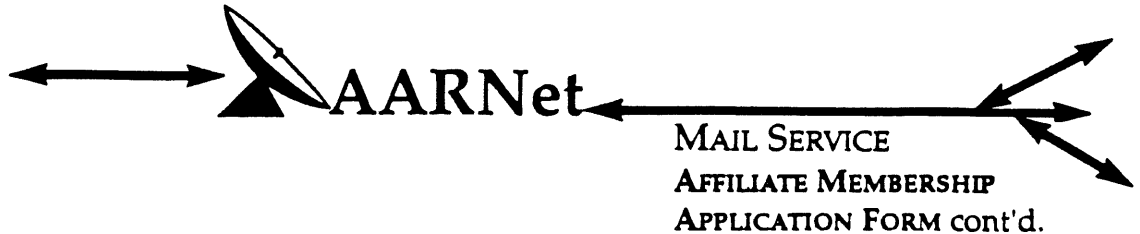
Expected Link Protocol: UUCP SL/IP MHSnet Other: _____

* * * *

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.uca.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.

~/archive> !AUUGN

!AUUGN

The following is reprinted from AUUGN Volume 9 Number 5. With all the buildup to AUUG 95 about networking it is worth remembering that AUUG has previously held conferences around a networking theme.

AUUG Conference Report

Keith B. Lewis Kathy Ching

October 13, 1988

1 The Conference

The 1988 Australian UNIX Users' Group Conference was held at the Southern Cross, Melbourne, on the 13th, 14th and 15th of September, at a cost of \$200 per person. It was attended by about 300 attendees, rather a lot of whom were wearing suits, although Greg Rose wore a tee shirt with '/nev/dull' written on it.

2 The Exhibits

There were about 20 companies exhibiting products at the Conference. IBM had two stands. One was exhibiting a rather boring looking minicomputer with some impressive display terminals, and the other was exhibiting an RT running AIX supporting a number of dumb terminals. This made IBM look a bit behind the times as most of the other vendors were showing work stations or PC's, but KBL was impressed with the range of commercial software running on the RT and the simplicity of setting it up.

Pyramid had a stand with a boring minicomputer and a 386 based box capable of running UNIX and DOS programs simultaneously.

The SONY stand had the most eye-catching workstation display. Their boxes were displaying a picture of a bowl and chopsticks that changed colours very impressively.

Comperex had a display of an RISC based UNIX box many times the power of a 780, not much bigger than a PC, mostly air inside, and with XT and AT expansion slots. They also had a video camera that was used to get images of most of the attendees. The purpose of this is that the images will be distributed to those who have workstations, and when such people receive mail from another person who also attended the Conference, a picture of the person who sent the mail will appear on the workstation screen. They also gave away free gelati during the breaks between sessions. They won't be forgotten in a hurry.

Other exhibitors included HP, Prime, NCR, NIXDORF, SIGMA, SUN and Honeywell. They all had UNIX boxes, workstations and PC clones.

One of the vendors actually had a VAX running VMS at their stand but they did their best to keep it hidden.

3 Formal Sessions

There were about nine formal sessions each day. They were given by such illustrious speakers as Ken Thompson (he and Denis Ritchie invented UNIX), Michael Lesk (he invented UUCP, -ms, tbl, lex and co-authored learn), Mike Karels (research leader at Berkeley) and John Mashey (VP MIPS Computer Systems).

3.1 Day 1: 13th Sep

The Conference was opened by Prof Poole (Com Sci Melb Uni) who gave a short history of UNIX in Australia. (Wollongong started it, Robert Elz brought it to Melbourne and it grew.)

The AUUGN printed copies of nearly all the papers presented, so I'll just describe those briefly, but the first paper was very good and relevant, so I'll describe it in some detail. It was given by Michael Lesk and described the origins of UUCP and purported to show that informal user supported networks are better than centrally administered ones.

Michael was a software support person to whom people would bring their computing problems. He analyzed the types of problems brought to him. Most of them were solved by telling the user to read the manuals. Of the rest, most could be solved by installing the latest version of software on the machine that the person with the problem used. These things got in the way of the interesting problems. His response was to invent UUCP as part of a master plan to do automatic software upgrading on remote machines. Mostly this was thwarted by administrators who took a dim view of him mucking about with their software, and claimed it was a security problem. Actually it wasn't as big a security risk as the people with problems giving him their usercodes and passwords.

UUCP grew, and became the basis of UUnet and thus is a kind of ancestor of modern networking. He then discussed some other networks:

ARPANET 150 sites, 56Kbit/sec links.

BITNET 1306 sites, 9.6Kbit/sec links.

UUCP >7000 sites, 1.2Kbit/sec links.

He then discussed the uses of networks, and in particular Email. A survey of Email at Bell Labs showed:

- messages average 70 words.
- 85% of Email is local.
- average message is received within 2.5 hours of being sent.
- average number of addressees is 1.2.
- 70% of mail is someone asking to be reminded of something that he once knew.

Lessons he claims to have learned:

- Don't have high speed and low speed links to the same destination. People will get used to the high speed link. If it fails it's better to wait for it to be repaired than to use the slow link.
- If dialout attempts fail, increase the time waited before trying again. Otherwise you get very annoyed phone owners when the computer is dialling the wrong number.
- Informal user supported networks are better than centrally administered ones. The network administrators may or may not own the network, but they do not own the computers attached to it. With the proliferation of systems it becomes impossible to get *all* the system administrators to agree to anything.
- Security is not worth worrying too much about. It's better to just make sure everything is identified. Then you can jump on offenders at a later time.
- low cost is worth bad performance.
- Separating E-mail from computing fails. There have been serious attempts to stamp out netnews.
- UUCP is not an entirely good thing. It is partly responsible for net-noise.
- Networks may go the same way as phonographs and television. All three were invented as educational gadgets.

- It is useless to fight the forms... We have to kill the people producing them. (This was a quote from an anti USSR propaganda slogan.)

- (He gave an example of queueing involving railways. Obviously an enthusiast)

The second paper was on future telecom products presented by Steve Jenkin.

- Telephone, Fax are here to stay.
- Telegram, Telex are evaporating.
- Viatel is going fairly well.
- X400 is coming.
- ISDN is coming, but no-one at the conference seemed to be happy about this. Only Telecom was seen as getting anything out of it.
- MAN's are coming. These are 150 Mbit/sec fibre metropolitan networks.
- BISDN — Don't hold your breath. This involves 4 150Mbit/sec fibers to every subscriber.

A company called QSPX was highly praised for work in this area.

There were two papers given on SUN-IV, the next version of the ACSnet software, by its developers.

- Some OSI compatibility.
- Different routing algorithm.
- Faster and better. Especially at startup of high speed links.
- Simplified management.
- Fast or cheap delivery.
- X400 message handling.

The next three papers were on windowing. One was on NeWS, SUN's postscript based windowing system. This is based on the concept of processes. An application program opens a channel to a workstation, and then sends it commands in a superset of postscript. Some of these commands set up processes that wait for events, such as 'right mouse button while over canvas A'. Other processes are set up to redraw canvases if they become 'damaged' by occlusion etc. 9600 baud is quite ok for this sort of windowing because of the expressive power of postscript.

X-Windows is a quite different sort of windowing system. It is based on collection of 258 primitive routines, a library of less primitive routines and some higher level objects, e.g. widgets. It is available free from MIT.

Greg Rose of Softway presented a most amusing paper on the only windowing system he could afford.

- He couldn't afford a BLIT.
- He couldn't afford a SUN or an Apollo.
- He tried two terminals side by side but that failed.
- He tried a PC running GEM with multiple sessions, but that failed.
- He finally tried an Atari ST running some free software he got from the UK. It works!

Next came a paper about implementing OSI protocols, especially FTAM. Results showed nearly an order of magnitude increase in code size between FTP and FTAM.

After that Mike Karels from Berkeley presented ISO/OSI under Berkeley Unix. The slides of his talk will be printed in the next issue of AUUG.

3.2 Day 2: 14th Sep

John Young of SUN, Larry Crume of AT&T, Ross Bott of Pyramid and Tom Daniels of HP discussed the SUN/AT&T based UNIX vs the Open Software Foundation alternative.

- System 5 will be merged with Xenix and SUN-OS to produce System 5 V 3.4.
- Application Binary Interface (ABI) was mentioned. This enables companies to sell 'shrink wrapped software' as is currently done with PC's.
- Application Source Interface (ASI) was also mentioned. This might enable portable programs to be written.
- Everyone seemed to agree that UNIX is now out of the 'small is beautiful' stage. Database systems are getting written into the kernel, along with whole hosts of other features. Experimentation is going on in the area of add ons rather than UNIX itself.

The System V version 4 directions are :

- In the operational, administration and maintenance areas are - backup and restore commands, configuration management, software installation, messages handling facilities and remote control.
- Improvement in real time - scheduler, general event mechanism and async. I/O.
- POSIX conformance.
- X/OPEN capabilities. - OPEN LOOK.
- Internationalization - foreign language, e.g. Japanese, error messages etc.

Users can obtain the specification of OPEN LOOK by sending request to AT&T Japanese office. Mike Karels then talked about research going on at Berkeley:

New features in 4.3:

- Disks now have labels.
- Flexible file system.
- Kernel memory allocator.
- Better TCP/IP that has slow start and congestion control.
- Disk tables that always should have been on disk now are.

Current projects:

- routed, EGP, gated, internet nameserver and extensions, IOS/OSI network protocol support, POSIX compliant interface.
- Wait for system call.
- Generic file system with VNODES.
- Rearrange filesystem so /usr, /bin, /etc can be shared.
- CMU MOK integration.
- Memory resident file system for /tmp.
- Reasonable hardware independent for a range of configurations.
- User interface finalized.

Virtual memory design that includes :

- Define process as regions :
 - Share memory with semaphores.
 - File mapping for private and share.
 - Copy on write for fork and file mapping.
 - Light weight processes.
- Larger share address space with multi-level, paged data structure and swapped image is not preallocated.

A paper was presented on the problems with networking SUN workstations at Sydney Uni.

- People with SUN's on their desk turn them off when they go home, and hence miss getting software upgrades etc. Various automatic updating programs were tried and rejected. Current solution is to do the upgrade, and all the machines that miss it, miss out. The upgrade will be done later for the user if he ever complains of any related software problems.

- security:

1. What is on a screen can be read by anyone anywhere on the network. This is because it is also in memory (video ram) and as well as that it appears as a device, /dev/fb, which is public.
2. Owners can reboot their workstations and hence run in single user mode.
3. The SUN diagnostic monitor allows the user to modify kernel data and code.
4. There is a bug in 'Yellow Pages' that lets unprivileged users supply their own password file for a whole network.

These problems were overcome by telling the users about them, suggesting they encrypt important files and pointing out that if they damage the network they mainly hurt themselves.

Next came a good technical paper about getting NFS to go on a VAX under 4.3 BSD. It seemed a lot of work, but really a fun kernel hacking.

Following that was a paper called 'Legal and Social Implications'. The paper was much as the title suggests. KBL enjoyed the serious suggestion that Fax and Email are illegal. Someone commented that there is a case about a company being sued for \$4.2 millions related to computer services.

Next Michael Lesk gave two papers about human interface issues. The first concerned a library where the users were presented with a choice of two terminals. They could either look up books using a command driven interface (much like sesame) or a completely menu driven interface (much like the HP system at Box Hill library). The command driven interface was used by 70% of first time users and a rising percentage of more experienced users. The conclusion was that the more the users know about what the commands are likely to be, the less valuable a menu system is.

The next paper concerned the extreme difficulty he had in getting management to actually sell a product he had produced, to a customer. The product was an AI system that provides instructions about getting from place to place efficiently subject to certain conditions. E.g. when driving one has to obey street laws governing one way streets, but when walking that would not apply. He showed examples of various routes through cities based on certain optimizations and compared them with the routes people would actually choose. The standard Dijkstra breadth first graph search algorithm produced very suboptimal results. The system was originally designed as an electronic yellow pages phone book. The customer who wanted to buy it was a car rental agency.

At the dinner that night John Mashey gave an amusing talk that compared a large software project to an army invading territory. The scouts were compared to software prototypes. The users were compared to natives, and they might accept the system, or they might try and slash the tyres and put gravel in the fuel tanks. Worse even than that, they might have left the area entirely before the project was finished. We thought the talk very good value as well as good entertainment, but it was slightly marred by the distraction produced by the hotel staff clattering dishes etc.

3.3 Day 3: 15th Sep

The final day started with the ACSnet meeting. The AVCC, Queensland Uni and Brian Carss came in for alternating bouts of criticism and defence. Results of some measurements of ACSnet traffic were presented. Bob Kummerfield was authorized to act on behalf of the ACSnet community in negotiations with the AVCC etc.

That was followed by the second of the two ACSnet papers. The one focused on the link management - commands file, config file and call script language.

Following that came the eagerly awaited paper by Ken Thompson. He is writing a very fast C compiler. Speed is achieved at the expense of code quality by combining two of the early passes into one, simplifying the intermediate structure, and reducing the optimization to two simple passes. He doesn't mind the lesser code quality, because he spends much more time compiling than running anyway. Surprisingly, the generated code didn't seem any worse than that of the standard compiler.

Next was a paper on distributed processing in the Queensland Government. The authors have produced a "cookbook" about how to buy, install and operate a UNIX box. Basically they have a terminal network, and wish they had a computer to computer network. Many of their machines are connected but cannot even send mail to each other.

Next was a paper on time synchronization in a network. (Pyramids over Ethernet in this case). We may well run his code on our Pyramids.

Next came a paper from ICL about a small office automation network. The MICROLAN 2 cable can be used to connect up to 8 workstations and among them one is the master unit.

Next came a very good paper about how to write portable UNIX programs. This was a very valuable talk. The paper itself was published in the AUUG newsletter. There were some notable comments on writing portable socket or share memory or semaphores code. Its is not easy.

Next came a paper by a Korean visitor about some real time extensions his group are making to UNIX. He spoke well but had trouble understanding the questions put to him afterwards. He gave the impression that the Korea Government and Companies (e.g. Samsung) have spent millions in research and development in his introduction of the paper.

Next came a paper on STIX. That is a port of MINIX to the Atari ST. As a MINIX user KLB was quite interested. The system runs well and is useful but the overhead needed to move programs around in memory was a bit disturbing. It was necessary because the ST has no memory management hardware.

Finally John Mashey gave a talk about RISC chips and the software that goes with them. In particular he spoke about a MIPS chip which has pipelines that can partially stall, and a compiler that generally manages to rearrange the code so that the stall times can be utilized. e.g. The instruction after a test and branch instruction is executed irrespective of the result of the tested condition. Only after that instruction completes will the branch happen or not as appropriate.

4 Informal discussions

We had quite a lot of informal discussions with other attendees at the meeting, and this resulted in several people suggesting solutions to some of our problems, and some offering to let us use bits of their software. This will be of great value to the university.

5 The End

And that was the end of a really worthwhile and informative, but extremely intense and tiring conference. (Following it there was an unannounced 3 hour delay affecting trains on the city loop, but KBL did get home, eventually).

Keith Lewis
Kathy Ching.