# AUUGN

**Features:**

**Regulars:**

UNIX® AND OPEN SYSTEMS USERS

# Editorial

Günther Feuereisen
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Well, this is it: the last AUUGN of the 1900s.

Come December 31, some of us will be involved in the biggest party ever; whilst a lot of us will be sitting in machine rooms watching to see if all the testing, preparation and hoop-la of the last couple of years has managed to prepare us for the (minor?) issue of getting to the $1^{st}$ day of January, 2000.

Either way, at a party or by a system console, it will definitely be the New Years Eve event that you'll be telling people about in years to come.

Here at AUUG, we are as always working towards doing more for you, our members. A special weekend workshop was held during 9-10 October in Sydney, to look at how we move forward into 2000 and beyond. The outcome of this weekend will be seen in upcoming months: through new initiatives and new areas for discussion.

This month, we welcome a new regular column: Con Zymaris presents the first installment of "The Open Source Lucky Dip".

As we near the end of the year, I'd like to pass on thanks to the AUUGN Editorial Team: Elizabeth Carroll, Mark Neely, and Jerry Vochteloo; as well all our regular contributors for their ongoing efforts this year. Like many of those who work in and around AUUG, they give of their free time to help put together AUUGN. Thank you all.

That's all from me. To you and your families, Happy Holidays, Happy New Year, and for those of you working – Good Luck!

See you in 2000!

*Günther*

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# Contribution Deadlines for AUUGN in 2000

| | |
|---|---|
| Volume 21 • Number 1 – March 2000: | **February 17$^{th}$, 2000** |
| Volume 21 • Number 2 – June 2000: | **May 17$^{th}$, 2000** |
| Volume 21 • Number 3 – August 2000: | **July 17$^{th}$, 2000** |
| Volume 21 • Number 4 – November 2000: | **October 17$^{th}$, 2000** |

# President's Column

David Purdue
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**guru** *n.* (*pl.* **-s**) **1** Hindu spiritual teacher or head of a religious sect. **2** influential or revered teacher. [Hindi] - *The Pocket Oxford Dictionary*

I find that increasingly I listen to ABC radio, especially when driving to and from work. Call it a sign of old age, but I much prefer in those minutes of commuting to receive information than to listen to someone else's choice of music, about 25% of which I agree with – not to mention the particular torture that is commercial radio advertising.

Which is how I came to be listening to an interview with someone who was a senior member of a telecommunications user group. I forget who it was, and I forget the bulk of the interview, but one aspect of it struck me as odd:

The interviewee was introduced as a networking guru, and he instantly rejected that title. He was worried that the term might make people think of him as the archetypical UNIX hacker type, beard, pony tail, shorts, braces, wearing sandals with socks, you know the deal. He asserted that he was far to business oriented to cope with this as a self-image.

I think this is a sad attitude, and that he has this thing in reverse.

When I think of a guru I do not think of a particular mode of dress. What I picture is someone with knowledge, experience and wisdom and, more importantly, a willingness to share this wisdom. In addition, the motivation for the guru is the respect earned by virtue of the wisdom possessed, and a desire to improve the human condition by contributing to the total amount of wisdom in the world.

Far from shunning this title, it is one I aspire to. It has been said that there is only a finite amount of "clue" in the world, and that the increasing population means that it is getting spread thinner and thinner. I think if we had more gurus, we could increase the total amount of clue.

AUUG President David Purdue at the AUUG'99 Conference Opening.

Which is where AUUG comes in. Chances are you are an AUUG member because you have an interest in computing technology (you are in the wrong society if you do not), and that interest is probably a professional one. This implies that you either have experience, or you are in need of it. If you are one of the experience rich, then we hope you will attend AUUG events and pass on some experience to the experience poor. This does not lessen your experience, but it can increase the total amount of wisdom, the total amount of clue in the world.

In early October, the AUUG Management Committee held a two day workshop where we discussed many aspect of AUUG – what is AUUG, who are AUUG members, what is it that AUUG does and how should we be doing it. We came to the conclusion that while advanced technology is important to AUUG, AUUG is more than just UNIX or Open Systems or Open Source. AUUG's primary raison d'être is to provide members with the information they need to either do their job better or to derive more enjoyment from the technology they play with. And the best source of this information is other AUUG members.

This is reflected in the new tag line that we shall start using in the new year:

Community = People + Technology

The Committee's workshop will lead to a change in the look and feel of AUUG, and in the way we deliver services to our membership. But that is material for a future President's column.
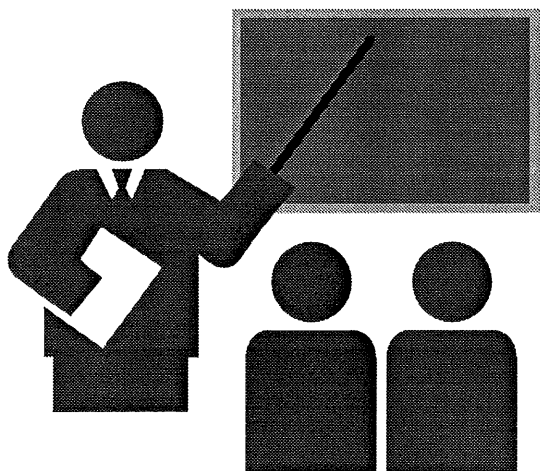
In the meantime, I ask you to think what you can do to get closer to achieving guru status.

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- 3 -                                                           November 1999

# Call for Papers
# AUUG2K

*AUUG2K Conference*
*5-7 July 2000*
*Australian National University*
*Canberra ACT Australia*

## THEME: "ENTERPRISE SECURITY, ENTERPRISE LINUX"

The AUUG Annual Conference will be held at the Australian National University, Canberra, Australia, 5, 6 and 7 July 2000.

The Conference will be preceded by three days of tutorials, to be held on 2, 3 and 4 July 2000.

The program committee invites proposals for papers and tutorials relating to:

- Security in the Enterprise
- How to get Linux into your business or corporation.
- Applications made possible by Open Source.
- Technical aspects of Computing.
- Networking in the Enterprise.
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Presentations may be given as tutorials, technical papers, or management studies. Technical papers are designed for those who need in-depth knowledge, whereas management studies present case studies of real-life experiences in the conference's fields of interest.

A written paper, for inclusion in the conference proceedings must accompany all presentations.

Speakers may select one of two presentation formats:

**Technical presentation:**
A 25-minute talk, with 5 minutes for questions.

**Management presentation:**
A 20-25 minute talk, with 5-10 minutes for questions (i.e. a total 30 minutes).

Panel sessions will also be timetabled in the conference and speakers should indicate their willingness to participate, and may like to suggest panel topics.

Tutorials, which may be of either a technical or management orientation, provide a more thorough presentation, of either a half-day or full-day duration.

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## SUBMISSION GUIDELINES

Those proposing to submit papers should submit an extended abstract (1-3 pages) and a brief biography, and clearly indicate their preferred presentation format.

Those submitting tutorial proposals should submit an outline of the tutorial and a brief biography, and clearly indicate whether the tutorial is of half-day or full-day duration.

## SPEAKER INCENTIVES

Presenters of papers are afforded complimentary conference registration.

Tutorial presenters may select 25% of the profit of their session OR complimentary conference registration. Past experience suggests that a successful tutorial session of either duration can generate a reasonable return to the presenter.

## IMPORTANT DATES

**Abstracts/Proposal Due:**
14 April 1999

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**Final copy due:**
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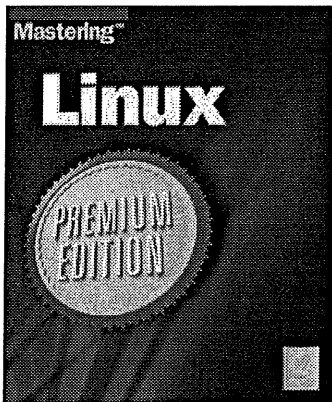
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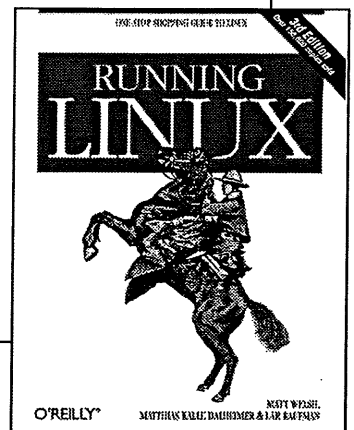
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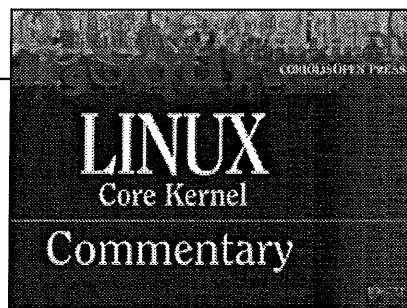
Linux Core Kernel Commentary adopts and extends the method used by the famous Lion's Commentary on Unix, which still is a much sought after title even 20 years after publication. In doing so it uses a horizontal format which allows for exhaustive cross-referencing, space for easy-to-read columns of code, and the book to stay flat while open. The complementary CD includes the Linux code (RedHat) and software that allows the code to be easily searched for specific features.

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# Commentary:
# Why Always Connected Must Mean Always Open

Nathan Cochrane
The Age

*[ Editor's Note: this was originally presented as the Conference opening - AUUG Open Source 99 Carlton Crest Hotel (8 September 1999) ]*

When Liz Carroll asked if I would speak at this conference, I thought she must have made a mistake. I remember thinking she must have opened up to the wrong page in the phone book - "you've looked under 'hack'; 'hack-er' is a few pages further on'."

Despite this small oversight I am delighted to be given the chance to talk to you today.

And talk I will. For those who enjoy slide presentations, I will have to disappoint. No slides, full motion-video or funny whooshing noises as I move from one bulletted point to another. All you get from me today is words, spoken, and without multimedia accompaniment. What I will talk about are my thoughts and opinions; they do not reflect in any way the policies or strategic direction of my employer, Fairfax.

And a quick note: At the risk of inciting debate, I will use the terms "Open Source" and "free software" as well as their variants, interchangeably during the course of the speech. 1999 will be remembered by future computing chroniclers as the year the world heard about, and fell in love with, Open Source. 2000 will go down as the year in which the wider world found ways to make Open Source useful.

Useful in the sense that business managers, corporate strategists, users at work and in the home found ways to make what you are creating relevant to their needs.

These groups will find ways to plug Open Source - it's code, methodologies and outputs - into a wider innovative and marketing narrative. And it will be the year that Open Source community – and industry it spawned - grows up to the fact that you don't have to fight every battle, that it is OK to co-exist with proprietary legacy systems where that makes sense. And to destroy those legacy allegiances where it is encumbers innovation.

2000 will be the year that the Open Source universe discovers its true calling and develops the killer applications that will solidify its hold over the computing landscape. Entrepreneurs and start-ups will flock to Open Source because it boot straps them into a tough market and gives them a lead on bigger, more powerful yet slower rivals.

2000 will be the year that more companies abandon their own attempts to reinvent the wheel, and instead concentrate on adding that 10-20 per cent on top of applicable core Open Source platforms and so deliver competitive advantage. In doing this they will also release what are to them tiny amounts of intellectual property to generate enthusiasm and establish their credentials. These little gold nuggets, of perhaps little importance individually, together will form a rich vein of innovation on which further gains can be made by all.

2000 will be the year that the digital nomads - people who must always be connected to the network - will come into their own. A new generation will for the first time be able to combine two killer apps – mobility and the Internet - into a seamless, anytime, everywhere experience. Whether it be a mobile phone, Sony Playstation II, Nokia WebTablet or some other device, Open Source systems will rate highly for their maturity, robustness and flexibility with these makers.

Researchers at Gartner Group estimate more mobiles will be sold this year than cars and PCs combined.

Think about that. PCs and cars combined.

By 2004, 40 per cent by value of business to consumer transactions will be over mobile networks, not landlines connected to PCs. This trend will reach dominance by the year after when there will be more than 1 billion phones.

High-speed wireless networks being deployed throughout the world will let the nomads take their information and entertainment with them wherever they go using a range of devices knitted together in a global brotherhood.

Mobile computing in the past has required a physics degree to sort out all the problems and sculpted musculature that would impress Arnie to lug the computing requirements.

The coming generation of devices for use in the home and in the field will require none of that. They will connect themselves to the network where all intelligence and maintenance will be. These devices will be cheap and seemingly powerful.

Among the first of these devices will be WebTablets. If you want to know what these devices will look like, rip the TFT screen off your laptop and you will be close. Within 10 years all children at school will possess these WebTablets and a variety of other devices, subtle in their uses, powerful when combined.

Other developments including digital ink, where pages about the thickness of a laminated sheet

can be reprinted indefinitely, information downloaded in real-time from the network, will replace dead wood in newspapers and magazines. These iScrolls, the next generation of printed information will come like old fashioned vellum scrolls, unrolling as you need them, and then rolling back up for storage and portability.

They will be adaptive. Information will be downloaded to them, and displayed depending on how far you care to roll them out. No longer will you have to make a choice between the convenience of a Palm Pilot and the completeness of a laptop display. With the new iScrolls, you will have both.

Devices will talk to each other automatically and without intervention as open standards gain adherents. And the chatter we perceive will be a fraction of what is actually going on, as embedded devices make our lives easier. The notion of what is computing will fundamentally change as silicon slips into your pocket, around your ear lobe, under your sneakers and ultimately embedded under your skin.

And the infrastructure, as well as the devices, will be made up of Open Source building blocks.

Not because these are cost-effective, although they are.

Not because they can be concatenated to form an end-to-end solution, or shoe-horned into an existing proprietary system to expand its potential, which is already happening.

Not because most of the work has already been done, and all that remains is to add that 20 per cent of commercial advantage.

Not even because to license other solutions requires supporting a rapacious competitor, yet this clearly is the case.

It will happen this way because people trust Open Source.

They trust it to work and keep working.

They trust it not to have nasty hidden back doors because everyone can see what's going on under the hood.

And they will come to trust in it even more, as more and more of our transactions, and our lives, pass over these networks and between these devices.

2000 will be the year that Open Source development methods will be seen by mainstream companies as not only viable alternatives, but increasingly the only way to stay in business.

2000 will be the year that developers assert their new-found strength caused by the global shortage of IT staff, and demand of their bosses a better way of doing things. And bubbling up

under all of this will be the silent majority of IT people who, emboldened by the recent leaps the movement has made, will add their voices to the melee.

2000 will be the year the last hold-outs, the nay sayers and those who say the revolution will fail, will change their mind just like they did about the Internet.

That's one view of the world.

Now let me paint you another.

2000 is the year of that other costly bug - Windows 2000.

When I was a kid I wasted a lot of time playing a game called the Sentinel. The goal of this simple yet addictive game was to acquire resources so you could climb to higher and higher levels on a 3D terrain. Complicating matters was the Sentinel, which occupied the highest level, and also consumed resources, including you if you weren't fast enough. The only way to avoid destruction was to stay out of the Sentinel's baleful gaze by remaining quick and nimble, until you could deliver the crushing blow from behind.

The Sentinel knows of your existence. The only way to stay in the game is to be quick, consume more resources than he, and then bash him on the noggin from a direction he doesn't expect.

2000 will be a year of unprecedented wooing of developers. The lack of suitable IT staff and corporate strategists are the only things standing in the way of the growth of the IT industry. Although some resources should be freed by the completion of Y2K work, there are plenty of other remediation and conversion efforts to keep those people busy.

Many of these developers will be lured to the Microsoft stable. At a time when more users, people who couldn't care less what makes their computer work so long as it does, start to use systems based on Open Source there will be increasing pressure on the people who maintain them.

In July, Microsoft president, Steve Ballmer, made the company's most aggressive grab yet for what he called "the hearts and minds" of developers.

Ballmer told analysts:

"And then of course there's LINUX itself ... a legitimate contender with application developers sucking them away from Windows, Windows CE, the Microsoft tool set."

I see some problems in the Open Source world.

One is over-confidence.

If you think you know who all your enemies are,

where all the threats come from, you're not looking hard enough.

The biggest threat is always complacency. The second is assuming too much.

The quote from Ballmer I mentioned earlier should convince you to take nothing for granted. A lot of Open Source development, the majority to date, takes place in people's own spare time for little or no commercial reward. The only payback is the satisfaction of doing something well. True, there are more jobs available all the time for Open Source developers in the commercial world, but don't kid yourself - for the next two years at least Microsoft systems will support the bulk of IT professionals, their mortgages, car repayments and families. And it is these systems that Microsoft will push ever harder for people to spend their professional time on, eating into their personal time.

Windows 2000 will have a sucking effect on resources.

It will suck developers, the intellectual capital of any IT endeavour. It will suck out resources from companies as more of them abandon Open Source due to board-room level decisions. And don't think it won't happen; it will. Boards care little for technical solutions, and they are highly influenced by marketing and business-based approaches.

And sad to say, it will suck dry the ink wells of curmudgeonly hacks who write for the press. Every new W2K story will be gushed over and tarted up. That's less space for the alternatives. There's a lot of pressure on news rooms these days, and I am not relishing the welter of press releases we will be bombarded with when W2K finally crashes out there.

Maybe in September, maybe in October ... January ... second quarter next year ...

But you can bet Microsoft is marshalling its forces - the independent software vendors, trainers, consultants and all those who rely on it for their existence.

Another is for Open Source developers to concentrate too much effort on reinventing what the other guy has done. The group research director at Forrester, John McCarthy, told me the other day, and I am sure many here will agree, that Windows98 is a classic example of everything that is wrong with a monopoly.

To those building a better desktop - kudos.

But for my money I would concentrate on the connected applications and devices of the future. The PC is being commoditised, broken up, and reconnected using its component parts. Get ahead of the game, look to the future of embedded, always connected devices and the infrastructure required to get them to work. The desktops will attend to themselves.

I'd like to single out for special mention the Enlightenment project. I can think of no better toolkit for interaction designers who have to develop new, compelling ways to manage devices in this emerging inter-connected world.

The needs of users should never be discounted. Users like things to look good, almost as much as they like things to work. And they like to not have to think too hard to get an answer. Fortunately the sort of elitism on the part of the Open Source community that shunned user concerns is dwindling. The notion of "if you don't like it, fix it yourself" is going. But more needs to be done to bring the average user into the fold, by contributing their views of the world and the way they want software to work. And encouraging them to act as advocates.

Having said all that, in the next 12-18 months there is a genuine need for good financial software. Businesses need good, readily supported software. For small business this may mean a MYOB clone. Not everyone has millions of dollars for a SAP R/3 installation. And the GST offers an opportunity to grab that 25 per cent or so of businesses that do not yet have IT resources, yet will have to file returns. So more needs to be done there.

And there need to be more games. Games are more than distractions. They inculcate the next generation of IT people and entrepreneurs. Games give life to dull boxes and show possibilities. They are also the testing grounds for next generation interfaces, so important for the future.

Another threat, but also an opportunity if handled correctly, is the move by software companies to rent their applications over the Web. The so-called "app-on-tap" or "rent-an-app" is emerging as a powerful new money spinner for software makers and their online partners, typically Internet Service Providers.

In this model, applications like word processors and financials, are rented over the network, rather than installed from shrinkwrap CD-ROMs bought from the software reseller. Initially these hosted applications are targeted at big enterprises, but ultimately they will be offered to home and small business users, probably alongside their Internet access.

Remember those WebTablets and iScrolls and similar devices I was talking about? They will have the ability to take input, record sounds and visuals and provide all the sorts of computing power we have come to expect from desktops. They will be able to spontaneously recognise and translate speech, offer directions in the user's native tongue and simplify life enormously. But they will do it wherever you are.

This new take on what was once called time-sharing aims to co-opt ISPs, many who have traditionally used Unix or Open Source variants

using the carrot of increased revenue. As access becomes more of a commodity renting apps looks like an appealing way to add value and beef-put the bottom line to a lot of struggling and not-so-struggling ISPs.

The catch: most of these new applications will run on only Windows NT servers. Microsoft and partner Citrix are going after the ISPs, what Intel calls the datacentres of the future, by promoting a business advantage, not a technical one.

And it seems like someone may have got there before Microsoft.

One bright spark here is the recent acquisition of Star Division by Sun Microsystems. Sun will offer StarOffice through its StarPortal initiative, in collaboration with AT&T, AOL, Bell South, Frontier, Fujitsu, GTE, Oracle, Caldera, RedHat, LinuxCare and others.

These new devices just got advanced productivity solutions.

For the first time since the emergence of the graphical user interface, and Microsoft's vanquishing of WordPerfect, we have a real war for the Webtops of users, the servers of their providers, and the networks that connect them both.

The move to hosted apps has the potential to be the same sort of wrenching shift in the way we communicate as the move from mainframe to mini to desktop, text to graphics, and stand-alone to Internetworked. Some analysts say that companies have a lot invested in Microsoft productivity apps and won't move.

I disagree.

They moved from Lotus 1-2-3 and WordPerfect when we switched to GUIs, they will switch again if conditions are right and the business case makes sense.

Microsoft knows this. Why do you think they are moving to cannibalise their own revenue streams? They are doing it now to avoid the likelihood that someone else will do it later.

All it takes is for the Open Source universe to embrace these new concepts born of mobility and networking it and extend them faster, better, and cheaper. To provide the hooks for future electronic commerce, and make it possible for business to do business better than before with the level of trust inherent in the Open Source way of doing things.

It has become mantra that to succeed, every new computing system needs a killer application - a way of using it that is so different from everything else that people just have to have it. For the PC it was a spreadsheet. For the Mac it was a GUI and desktop publishing. The Web browser was the killer app that kickstarted the Internet and, in turn, enabled it to be embedded

in everything we do. Much of the Net is based on Open Source; so was Open Source the killer app for the Net or the other way around?

I believe Open Source will succeed. Not for any fluffy philosophical reasons, or even because it makes sense for business. Open Source is merely a continuation in many ways of another revolution - The Internet Revolution. What guaranteed the Net's success - flexibility, accessibility, interoperability, peer-review - is what will guarantee Open Source's success.

I believe the killer apps for Open Source is still to be realised, but it isn't that far away.

It may be mobility, the ability to take powerful computing with you wherever you go.

It may be that truly open standards, not "de facto" standards, permit an unprecedented interoperability of devices.

In the case of Linux it may be the close association between the client and server that enables this mobility to be fully realised in a way no other system can.

It may be the modular nature of many Open Source projects permit easy embedding inside silicon.

It may be that developers simply find it "cooler" to code for Open Source projects than the alternatives and so will remain loyal.

But I believe the over-riding "killer app", for wont of a better term, will be trust.

Trust that no-one owns this thing called Open Source; that as entrepreneurs you can make your own decisions and not subsidise a competitor with an onerous tax. That your profits are truly your profits.

Trust that people implement code and architectures because it makes sense to do so, not to swell the bottom line of the company, which makes it.
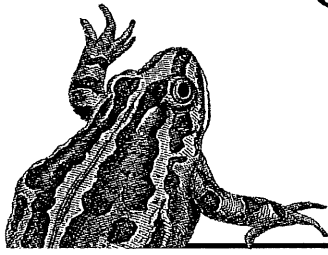
Trust that as citizens when we start to put our personal details, our livelihoods on the line, that it's our best interests held close to heart, not someone else's.

And trust that as a society, we have no choice.

This new global world of connected devices everywhere is too big to allow it to fall into any one entity's, any one individual's, hands.
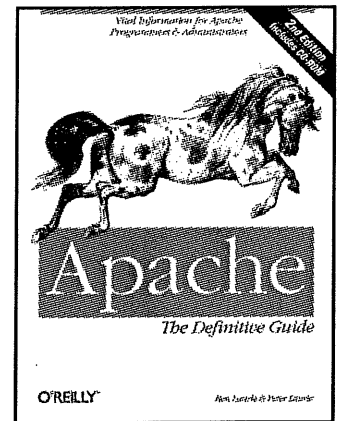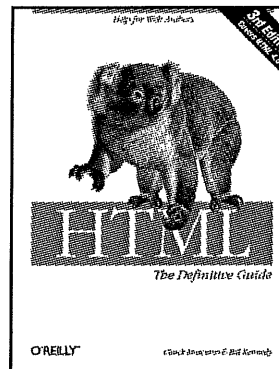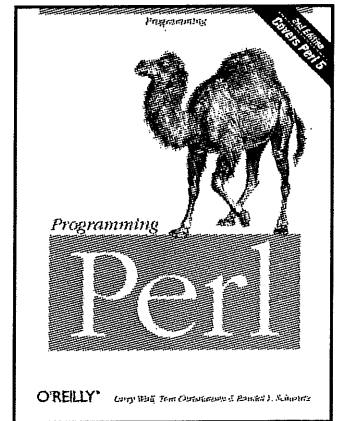
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# Experiences Auditing IT Security Systems

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*[ Editor's Note: this was originally presented at AUUG'99. Our thanks to the authors for allowing us to reprint this paper in AUUGN. ]*

## ABSTRACT

Auditing of IT security systems is becoming increasingly popular. Organisations for various reasons would like an independent appraisal of their security initiatives. This paper presents the experiences of the ISRC at QUT and COSIC at K.U. Leuven in independently auditing IT security systems. Unfortunately the results of most of these audits have been poor, with many systems being vastly inadequate, and even the motives behind the audits not always promising. This paper aims to describe the deficiencies encountered in the IT security systems, the various reasons why these may have occurred, and gives an overview of the approach that should be taken in building IT security systems.

## 1. INTRODUCTION

Over the last ten years, the Information Security Research Centre (ISRC) [ISRC] at the Queensland University of Technology (QUT), and the Computer Security and Industrial Cryptography (COSIC) group [COSIC] at the K.U.Leuven, have seen an increasing demand for their services to audit IT security systems.

Companies, both big and small, government departments and Internet service providers are each seeing the need for external, independent audits. Not only are they concerned with the connection of their site to the Internet but also, increasingly, the entire architecture of their internal network. This might include a review of their network design, or it might be as involved as a review of the cryptographic protocols used by their proprietary software. Importantly too, auditing has now become a recurring activity for many organisations, realising that maintaining security levels is an on-going effort.

There are many reasons why an organisation would seek out and pay money to have their IT security systems audited. The obvious business reason is that there is a growing awareness of the likelihood and ease to which organisational information systems can be accessed by unauthorised persons, both from the Internet, and also by persons within the organisation. Credit for this awareness can be attributed to the media, and also excellent academic material, for example by Denning [Denning98]. Companies often seek an assurance that their site meets the minimum requirements (both from a security perspective and from a business perspective).

There are, however, other less noble reasons than genuine concern for an organisation's information assets to audit. The most common being an attempt to shift the responsibility off to an external party. In this case it appears that the organisational representative is less driven to identify problems and improve an organisation's security, and more to get some sort of *certification* of the organisation's security. This is very dangerous for an organisation, because unless the auditors are credible (and unfortunately there are more who are not than those that are), senior management can be left with misplaced confidence.

Another reason for an audit, is that the organisation has experienced a security incident. For example they have identified an intrusion from the Internet, or have discovered some valuable information in the hands of an unauthorised party. Whether this was from an Internet intrusion, or from an internal employee, is often unknown.

External requirements also result in audits. There may be requirements from an industry or government regulator, or perhaps another organisation with a vested interest. Healthcare is a good example of such a regulated industry.

Regardless of the underlying reasons for an audit, the results of our auditing have, unfortunately, been far less than impressive. Our experience is that the vast majority (perhaps over 80 percent) of security reviews and audits detect large weaknesses in the first instance. This seems to us a sad indictment on industry, which should be better placed in the late 1990s.

The aim of this paper is to communicate this problem to industry. It aims to make the reader aware of the most common problems that are encountered. It also gives remedial steps to be used by organisations in improving their current situation, or for constructing a new IT security system.

This paper is intentionally vague in some examples in order to protect the identity of current or former clients of the Queensland University of Technology and K.U.Leuven.

# 2. TECHNOLOGY MANAGEMENT PROBLEMS

## 2.1 Top-down Refinement

It is generally accepted that senior management must drive the security management for an organisation. Other levels of management may not adequately appreciate the business risks, or may focus only in one area and neglect another. That said though, senior management cannot be expected to specify security countermeasures, for example which brand of firewall to buy, or how long passwords should be.

Many organisations do not have an organisational security policy, and too often those that do, seem to just ignore it, often because it is irrelevant to the person in question. Many times management of an organisation have asked for a security audit, when they don't even have a policy defining what security the organisation needs. This lack of requirements usually mandates that the auditor analyses the organisation for their security requirements. Often this can be simply achieved by interviewing several managers, however this always increases the cost of the audit.

A difficult concept for technical people to discuss with senior management is the level of required security. It is often heard that the Chief Information Officer (CIO) just wants a *secure system*, however it is well known that security is a not a binary decision. That is, you do not just decide on all or nothing. For example, it is obvious to even lay-people that there is a significant difference in the level of security required by a bank compared to that required by a department store.

## 2.2 Layers of Policies

Several organisations have attempted to have a single security policy document for the whole organisation. In one extreme example the policy was 100 pages long, with 40 pages dedicated to detailed specification of how cryptographic systems should be keyed. Clearly this document was inappropriate for an organisation-wide policy document.

In reality a policy must be a layered set of documents with increasing derivation of policy into practices. Often an organisation may have this layering, however the documentation is not coherent. Perhaps the practices acceptable to the organisation have been decided at several meetings spanning several years and is documented only in meeting minutes or random email messages. This makes the task of the security auditor difficult.

In some instances policies have been submitted to the CIO that include implementation specifications. An example of this is a set of firewall rules. Clearly the CIO cannot and should not be expected to accept such a document as a policy.

On the other end of the scale the firewall administrator may get a policy directive such as *protect our information assets*. Clearly this also gives very little guidance to the firewall administrator or auditor.

The objective must be to provide the correct interpretation of policy at a level that is appropriate for the staff involved. If this approach is followed, it makes it possible for people at the various levels of an organisation to take responsibility for their part of the implementation.

## 2.3 Responsibility

Frequently during security audits and the associated tendering processes, it is clear that a commitment to the organisation's security objectives is not the goal, but rather to push the responsibility off to an external organisation. We would call this the *rubber stamp* mentality.

Another sadly common experience is that security has been a *last minute* thought. It also seems to correspond that the same organisation wants a guarantee of security from the auditor to pass on to the organisation's board or their customers. In some of these situations the best approach has been to walk away from the work.

Another common characteristic of these types of organisations is to spend more time and effort in arguing with the auditor, than what would be taken in correcting the problem. A good example is firewall rules that allow spoofing attacks. Some managers have stepped into a face saving posture, rather than just adding in the additional rules.

A very common problem is that technical people take on the responsibility and risk of the system security when they fully understand that the system cannot withstand a direct attack. Upon questioning these people why they do this, the most common answer is that the required technologies cannot be afforded. This is a very risky judgement for a technical person to take. Firstly, it is clear that the system cannot provide the required security - and they know it! Secondly, it should be the custodian of the information who makes the judgement of how many resources can be afforded in order to protect their information. This approach transfers due diligence responsibilities to the custodian.

It also seems to be a very common situation that management are largely non-technical people and there is a great crevasse in understanding the issues in both directions between management and technicians. Perhaps this is just a peculiarity of the IT industry. This industry is so young and so desperate for people that it is unusual for management to have grown up in the business. This is so different to

what can be found in the manufacturing and mining industries for example. On the other hand, it seems common for technical staff to spend such a large part of their time learning and tuning IT technologies that there is often little business knowledge. This whole situation is compounded by the out-sourcing strategy of many organisations. On one project, the auditors were the longest serving people!

## 3. TECHNOLOGY IMPLEMENTATION PROBLEMS

### 3.1 Staffing Issues

Auditing IT security systems has at the same time introduced us to some of the best people and worst people in the industry.

We have seen organisations placing ultimate trust in individuals as systems or firewall administrators, when the user is not familiar with a command line, or does not understand IP routing. There are several possibilities that can lead to this situation:

- The individual lacks awareness of their knowledge limits.
- The individual is buzzword compliant and the manager in question has taken this as assurance that they know what they are doing.
- The individual has passed an industry certification test.
- A talented systems administrator is not naturally a good security administrator.
- Individuals with a *try it and see mentality* - our codeword - cowboys.

Below are listed just a few of the examples that we've seen that lead to the above comments:

- An Internet Gateway constructed without a firewall.
- Out-of-the-box installs for security servers and firewalls.
- Routers configured to route traffic into subnets when the subnet exists in a separate part of the organisation.
- Firewalls configured with default permit policies.
- Filtering routers permitting access based on unauthenticated source addresses and source ports.
- E-commerce systems boasting strong 128 bit cryptography, when in practice the session key is only protected with 40 bits.
- E-Commerce servers on the same network as the internal organisation.

### 3.2 Certification and Accreditation Systems

An approach long championed by governments world-wide is that of certification and accreditation. This work began with the Trusted Computer Security Evaluation Criteria (TCSEC)

[TCSEC] of the US Government. The Europeans refined the work adding needed flexibility and this resulted in the Information Technology Security Evaluation Criteria (ITSEC) [ITSEC]. ITSEC remains the current standard under which Australia performs product and system evaluations. In the near future Australia will move to the Common Criteria 2.0 [CC], an effort to amalgamate the US and European efforts. This standardisation effort is also to be submitted to the International Organisation for Standardisation (ISO) with the number ISO15408. The essential objective of these evaluation standards is to setup a process under which products and systems can be verified to meet the security claims of their manufacturers.

To date industry has not used these evaluation systems except recently in the area of firewalls. Currently under the Australian system there are four evaluated firewalls and four more under evaluation [DSD].

The question to be answered however is what does the certification mean. How much better is an E3 rated firewall over an E1 rated firewall? The full answer is in the ITSEC standard and the associated Information Technology Security Evaluation Methodology (ITSEM). Security evaluation is about assigning a level of confidence (assurance) to the security claims of a vendor. The level of assurance provided by the certification is dependant on the level of analysis by the independent evaluator.

The E1 level of assurance is a fairly superficial analysis of a product or system, almost at the level of just checking the marketing brochures for too much hype. There is no internal analysis of the product. For E3 certification, ITSEM requires the evaluator to ensure the vendor developed the system using a structured methodology and to perform sample inspections of the source code. Note that E3 does not mean that the source code has been poured over at long lengths. Essentially it is a system of sensibility checks for obvious flaws and ensuring that the developer has a sound software engineering system in place.

When a system claims to have a particular security evaluation level, examine very carefully the evaluation certificate. This is available from the evaluation authority, rather than the vendor. A classic example was Microsoft marketing Windows NT as C2 certified under the US TCSEC standard. In fact the certificate of evaluation was for Windows NT 3.51, as long as the machine is not connected to any network and the floppy drive is disabled! Certificates are often issued with qualifications on usage of this kind, so watch out for the marketing hype.

### 3.3 Out-sourced Configuration

We have seen several examples of security systems, for example host security on a server, or a firewall system, installed by external

suppliers. Many of these have had a naïve security configuration. It seems likely that the installers are under tight time deadlines and the thing that is omitted is the security configuration.

It is quite alarming to an organisation when they find that their trusted supplier has installed a firewall with *rshell* open to the whole Internet, or commonly (several instances) with an NT based firewall having NetBIOS accessible to any machine on the Internet. In our opinion NetBIOS should be disabled on a firewall, or if the organisation sees it as a requirement, then it should only be accessible to internal networks.

The following lists examples of poor technical security practices that are all too common:

- Out of box installs of operating systems on firewalls.
- The Berkeley rtools running on security sensitive servers.
- NetBIOS open to the world on NT based firewalls.
- X11, NFS on firewalls or security sensitive servers.
- Unnecessary applications installed on firewalls.
- Firewalls with dial-in accounts, or dial-in modems behind firewalls.
- No login warning or banners on firewalls or security sensitive servers.
- No virus protection.
- Systems un-patched since installation.
- Good logs being kept, but there isn't anyone actually reviewing them.
- The logs are not protected on the system, so if a privileged account is cracked, the logs are useless.
- Strong authentication (tokens) for the initiation of a session, but the TCP session open to hijacking.
- A lack of consistency towards the threat containment with a large amount of effort in one area and almost none in another, making the large effort almost worthless
- Default passwords still enabled.
- Password rules applied to most user accounts, but totally weak on other accounts.
- Passwords recorded on white-boards.
- Passwords like partner's/children's names, or pa$$word, password1 etc.
- Random number seeds that never change.
- Use of cryptographically weak pseudo-random number generators.
- People using proprietary ciphers, instead of well proven ciphers, for example triple DES.
- Unnecessary use of complex cryptographic protocols giving a false sense of security.

# 4. CORRECT METHODS FOR BUILDING IT SECURITY SYSTEMS

*4.1 An Engineering Approach - From Policy to Implementation*

Implementing a security solution that meets the requirements of an organisation is not an easy process. A good understanding of the responsibilities from the highest management level to the coal-face implementation is required.

We suggest a strict engineering approach be taken. The approach should start with trying to define the highest level security policy. As we have stated previously this means a policy that is written, or at least approved at the highest management levels. Security needs to be driven from the top.

If an organisation understands the values of its assets, what needs to be protected and what the realistic threats are, then writing a security policy may be a fairly simple process. However, if the organisation really doesn't know what information assets it possesses, their intrinsic value, and the possible risks to them, then a *business needs analysis* is required. In most cases this involves the organisation bringing in external consultants experienced with this kind of work.

The top level security policy should be short, direct and at a level that can then be expanded to lower level policies. These expanded policies then form the basis of the implementation, or they may be further expanded if required. The important issue is that the policies at each level are unambiguous and are suitable for the employees working at that level.

*4.2 Sourcing Skilled People*

In many cases an organisation may not have the skilled employees required to realise the requirements of the security policies into technical solutions. In some cases this is solved by new *experts* joining the organisation, in other cases by out-sourcing the work. Whatever scheme is deemed suitable for the organisation check the credentials of the people. Ask for references.

*4.3 Training and Education*

Training for employees is usually required at two levels. The first is that technical people within the organisation may need to be trained to look after the on-going maintenance of the technical solution. We generally stress that system administrators do not *always* make the best security administrators, so some training is required in most cases.

Users of the systems may also need training. This may be as simple as making them aware of password requirements, or more complicated so

that new more secure procedures are put in place.

### 4.4 Independent Reviews

IT security solutions should be audited. The important rule here is that those who implemented the solution, should take no part in auditing the solution. We suggest that independent auditors, not involved in the design or implementation, be used so that they are not biased in any way.

However, beware of the cowboys. Many consulting firms now provide IT security auditing as an addition to their other services. The size of the organisation is not a good indication of the experience of their IT security auditors. For example, we have found even the largest auditing companies too often rely on their reputation as financial auditors and quite often make poor IT security auditors. On the contrary, we have also encountered small auditors who are not competent, and in some cases these auditors are willing to take on almost any risk to obtain the work. So again, organisations should check references before contracting security auditors.

### 4.5 On-going Maintenance

Even a well engineered IT security solution that has been correctly audited needs on-going work. In most cases this involves regular updating of system patches, keeping up to date with vulnerability lists (for example BUGTRAQ [BUGTRAQ]) and monitoring of logs each day. It also means version control of documents and configuration management of the systems.

Unfortunately this is where many organisations fall down. They have spent a lot of money building a solution, but lack of maintenance has allowed its reliability to decrease with time. Maintenance is critical.

Organisations also are changing very quickly in the 1990s. The security policies themselves should be reviewed at intervals, so that they are kept up to date with changing requirements.

## 5. CONCLUSIONS

Many organisations are implementing IT security systems to protect their important information systems. However, either through lack of understanding of the correct processes, or perhaps because of a superficial level of concern, many of these initiatives are haphazard and ineffective. Auditing has demonstrated to us that the level of awareness of the correct approach to solving the problem needs to be greater. This way organisations will have a more reliable method of ensuring their site's security.

## REFERENCES

[BUGTRAQ]
An Internet mailing list devoted to the announcement of the discovery of bugs in software, etc., and fixes.
http://www.securityfocus.com

[CC]
Common Criteria Version 2. ISO 15408.

[DSD]
Defence Signals Directorate Information Security Branch http://www.dsd.gov.au/infosec

[COSIC]
Computer Security and Industrial Cryptography, K.U. Leuven
http://www.esat.kuleuven.ac.be/cosic

[Denning98]
"Information Warfare and Security", Addison-Wesley, December 1998, ISBN 0201433036

[ISRC]
Information Security Research Centre, Queensland University of Technology
http://www.isrc.qut.edu.au

[ITSEC]
Information Technology Security Evaluation Criteria

[TCSEC]
Trusted Computer Security Evaluation Criteria

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If you have any experiences using Linux that you would like to share with other AUUGN readers, drop us a line at:

auugn@auug.org.au

We'd love to hear from you!

# Images from AUUG'99
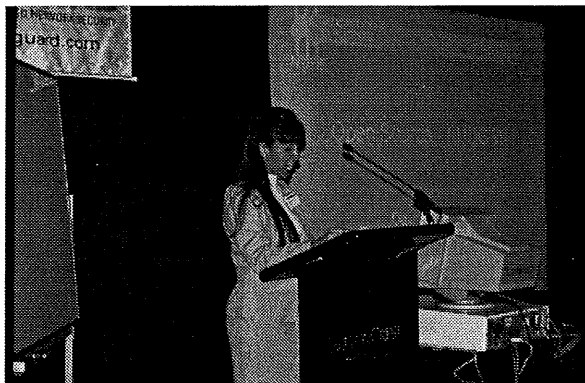

Elizabeth Carroll opens the Conference
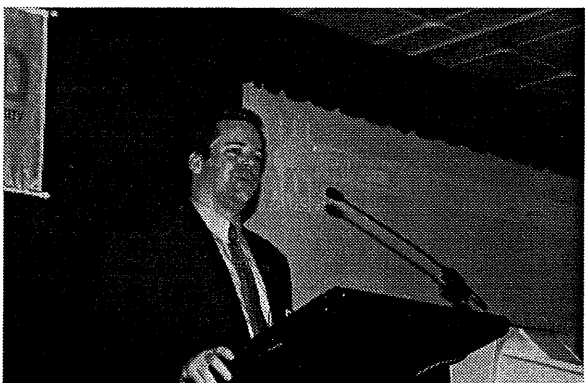

Nathan Cochrane from "The Age"
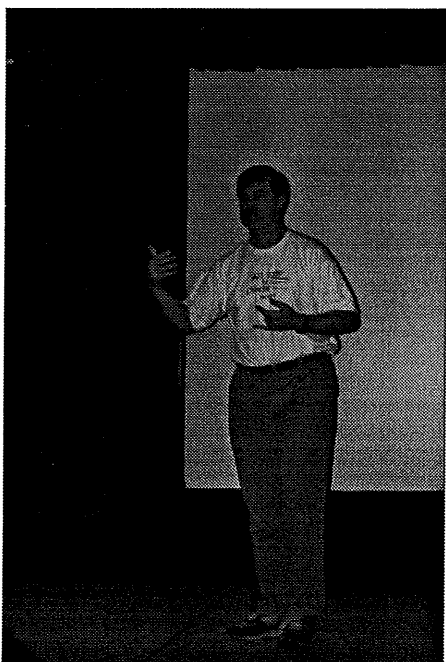

Andrew Tridgell
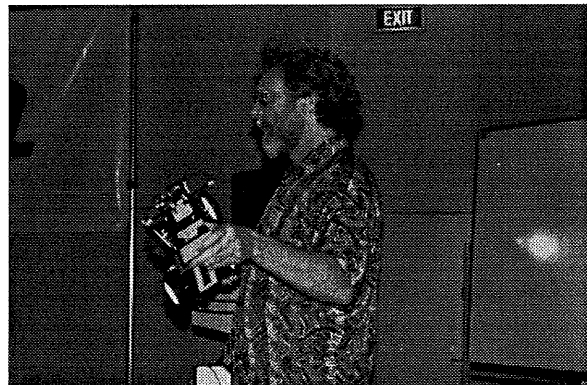

Jan Newmarch with "Robot"
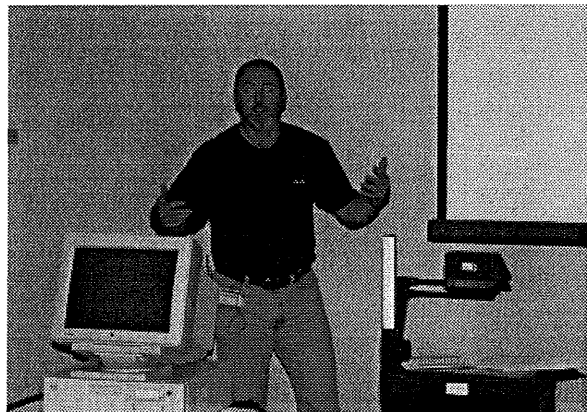

Andrew McRae
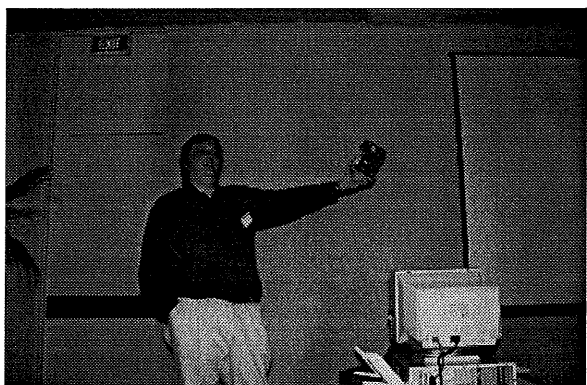

Enno Davids and "Technology"
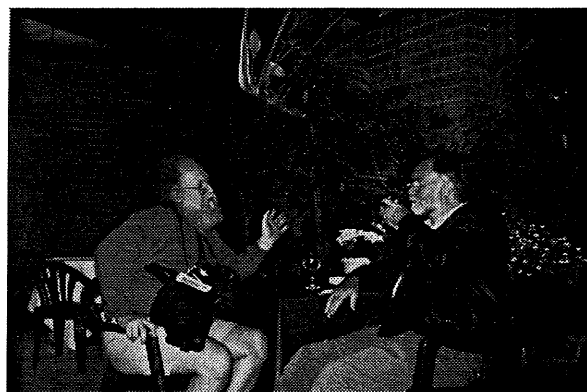

Jon "maddog" Hall and Greg Rose at the Emerald Hotel Speakers Reception
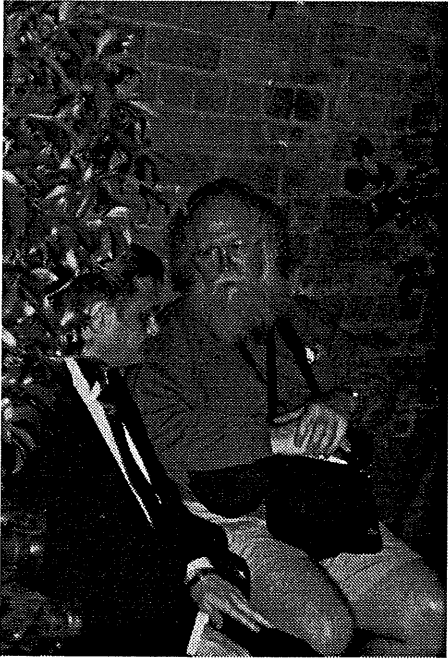
David Newall listens to words of wisdom from Jon "maddog" Hall.



The theme of this years dinner seemed to be "construction" (or did a lot of Civil Engineers gate crash?)
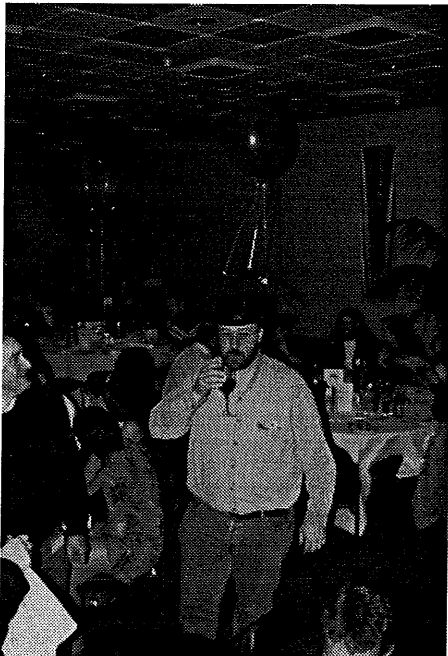


Michael Paddon with the latest in fashion headwear.



This picture was taken at the start of the evening ..

"1 Tequila .. 2 Tequila .."
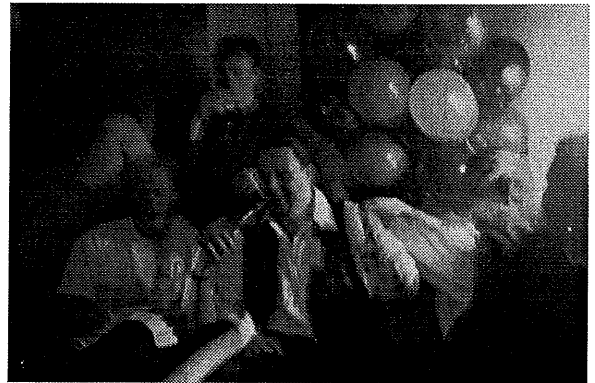


This is what the same room looked like from the Photographer's point of view, sometime later ..

"Three Tequila .. Floor!"



Back at the construction site, the party continues!

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# Introduction to Jini and the Sun Community Source License

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## ABSTRACT

Jini is a new technology developed by Sun Microsystems that dramatically expands the power of Java Technology. It enables spontaneous networking of a wide variety of hardware and software - anything that can be connected to a network. Sun has made the Jini source code freely available through the Sun Community Source Code License (SCSL) model. This model is designed to blend the best aspects of both proprietary and Open Source licenses. This paper will provide an introduction to both Jini and the SCSL.

## 1. THE JINI VISION

Jini has been designed to enable spontaneous networking of hosts, devices and software services. Jini allows them to be connected via a network simply by plugging them in. There should be no need to configure device drivers for printers, disks or any other network capable device or service. If a device is removed from the network, Jini ensures that this occurs in a robust manner - clients of the device can be assured of clear failure conditions.

A typical scenario might be a hotel guest who has a Jini enabled personal organiser. Within a few seconds of being powered up, the organiser joins the local area network of the hotel via its infrared network interface and negotiates the use of the hotels fax, printing and Internet connectivity services. Using the Internet connection, the organiser contacts the network storage service at the user's office and makes all of their files available. These files can then be printed or faxed using the hotel facilities. All of this has happened without any need for complex installation and configuration of device drivers, indeed it has performed these functions and made these services available without any human intervention at all.

Instead of having to code to the lower level protocols of TCP/IP, with Jini technology, everything is an object. Jini blurs the distinction between hardware and software, software applications and devices become simply services on the network. In this environment, a disk is not a peripheral attached to a computer, it becomes a type of storage service provided to the network. Instead of large monolithic applications, there are many services that each implements a functional subset of that application. These services can then be harnessed to provide the same functionality but with increased flexibility and reuse than the original application provided. Jini is designed to enable this intelligent network of services that can work together with or without human intervention

## 2. WHAT IS JINI ?

Fundamentally Jini is a 100% Pure Java based set of software API's and protocols that federate groups of services on a network. There are three key components to Jini technology: the infrastructure, programming model and services.

The most important concept in the Jini architecture is the service. A Jini system should be thought of as a group of services. There is no demarcation between clients and servers - a client of one service may in fact provide a service to numerous clients itself. Services are represented by objects written in Java and have an interface that defines the function(s) that can be requested of the service. Services use the Jini infrastructure to communicate with each other.

The Jini infrastructure builds on the existing RMI[1] capabilities of Java and includes the discovery, join and service protocols that allow services to discover, join and publish their services to the rest of the djinn[2] . The Jini Lookup service is a fundamental part of Jini technology and is supplied as part of the infrastructure. The Lookup service allows services to register and make themselves visible and available to other services.

The Jini programming model is enabled (and used) by the Jini infrastructure. It defines three major sets of interfaces:

- The leasing interface, which provides for distributed garbage collection and resource management.
- The event and notification interfaces, which provide event based communication between Jini services.
- The transaction interfaces, which enable Jini services to cooperate in a transactional

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[1] Remote Method Invocation (RMI) provides the ability to invoke methods of objects on remote systems using a network protocol (Java Remote Method Protocol - JRMP).

[2] A djinn (pronounced as gin) is a term used to describe the group of services federated by the Jini infrastructure.

manner.

Although the primary definition of these APIs is through interfaces, reference implementations are supplied with the Jini software distribution.

Each of these three components (infrastructure, programming model and services) is built in terms of the others. For example, every service registers with a Lookup service on a leased basis.

## 3. THE JINI PHILOSOPHY

Many of the goals of Jini have been discussed previously: Network plug and work, removal of the hardware/software distinction, spontaneous networking, and the enabling of service based networks. However, one of the overriding goals for Jini is simplicity. Simple enough that a Java Programmer can learn the fundamentals of Jini in a few days. Simple in that a large system built on simple concepts is inherently more robust than a large complex system.

To build a well behaved Jini service is straightforward, in fact much of what is required comes down to a number of simple idioms which are encapsulated in utility classes. Jini is small (thus simple) it is less than 35,000 lines of code. Because it is based on RMI you can simply extend existing objects with RMI to create new Jini services. It is even a straightforward process to wrap services built with other distributed paradigms or non-Java platforms into Jini services. For example, RMI over IIOP allows CORBA objects to be published as Jini services within a djinn.

Another goal of Jini is to build resilience into networks. With Jini, if a device breaks, its service simply disappears. If the network goes down each device automatically re-registers its service once the network comes back up.

Finally, Jini was designed to be an inclusive technology. Not just from a technical perspective (any platform, any device, any software service), but through to the development process and the Jini community. Anyone can be involved, everyone has access to the source code - individual developers are equals to corporate developers within the Jini community.

## 4. WHAT IS REQUIRED TO RUN JINI ?

For Jini software to run, you must have:

- A Java 1.2 virtual machine
- A network of reasonable speed to connect devices and software services
- A class file server[3]

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[3] When objects are parsed by value with RMI, only the object state is serialised. The code that implements the behaviour of the object, the class file,

- And each Jini enabled device should have some memory and processing power

Devices without processing power or memory can be connected to a djinn via a hardware and/or software proxy service that represents the device in the djinn. While Jini does not specifically require TCP/IP, the network must support unicast, multicast (preferably) and be integrated into the virtual machine. Generally, although not specified by the Jini specification, some form of dynamic address allocation scheme is required. Using the Dynamic Host Configuration Protocol (DHCP) is a common method to achieve this.

## 5. THE JINI ARCHITECTURE

### 5.1 RMI

Remote Method Invocation (RMI) is used by Jini enabled services to communicate with each other. RMI provides a form of object-orientated RPC, similar to other distributed technologies such as CORBA, to Java. It allows methods to be invoked on objects that reside on remote hosts. One of the useful features of RMI is the ability to parse objects by value. This allows objects to move around between systems. This ability to move executable code around the network in object form provides Jini with much of its power and simplicity.

### 5.2 Discovery, Join & Lookup

As described previously, services register their existence via a Lookup Service (or services). Associated with the Lookup service is a group of protocols used to interact with the service: Discovery, Join and Lookup.

### 5.2.1 Discovery

The Discovery protocols are used by services to obtain references to Jini Lookup services. There are three related Discovery protocols: The multicast request protocol, the multicast announcement protocol and the unicast discovery protocol.

The multicast request protocol is used by services to discover nearby Lookup services. It is used by services that have just started up and need to locate nearby djinns. The protocol uses multicast UDP to broadcast the request. As most routers are configured to not forward multicast packets, it is expected that the Lookup service(s) will be running locally. In the event that the

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is not serialised. So that the receiving object can find the required class(es), the location of the class file(s) is attached to the serialised data that is sent by the sending object. The location is specified as a URL. A minimal web server is supplied as part of the Jini distribution to allow class files to be loaded using the HTTP protocol.

service is in an environment where routers can forward multicast packets, a default maximum number of routers that the multicast can be forwarded through is set at fifteen.

The multicast announcement protocol is used by Lookup services to announce their availability to interested services residing within the multicast boundaries. Like the multicast request protocol, the announcement protocol uses multicast UDP to broadcast its existence and has the same network constraints.

The unicast discovery protocol is used by services to find specific lookup services. This protocol is generally used to locate known remote lookup services. For example, the unicast protocol would be used if a client needed to access their home djinn from their office through the Internet. The unicast discovery protocol uses unicast TCP instead of multicast UDP.

### 5.2.2 Join

Services use the join protocol when they start up and register with a lookup service. The following actions defined by the join protocol are required of a service when it initially starts up:

- The service should pause for a random amount of time (a maximum of fifteen seconds is recommended) when it intialises. This is required to prevent a packet storm if a network segment, containing many services, recovers from a power outage

If specific lookup services have been specified by the service, the service attempts unicast discovery with each one. If any of the lookup services do not respond the service can choose to retry or stop trying.

- If any groups[4] have been specified, the service sends a multicast request and registers with those lookup services that respond. If the service receives a multicast announcement from a lookup service that is a member of the groups the service is also a member of, the service registers using the unicast discovery protocol. If no groups are specified by the service, the service is regarded as being a member of the public group.

A service registered with a lookup service must periodically renew the lease on its registration. If a service cannot contact a lookup service discovered with unicast discovery that it has

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[4] Groups can be defined to limit the scope of a lookup service. For example, you might place the lookup service for the floor of a building in its own group and configure each of the floors services to join only the lookup services of that group. As a result, services on other floors (that are of no use to clients of this floor) would not be able to join the lookup service for the floor.

registered with, it must continue to retry registering with that lookup service. If the service cannot contact a lookup service that was discovered via multicast discovery, the service can ignore it and wait until it receives a multicast announcement from the lookup service.

### 5.2.3 Registration

A number of utility classes and interfaces are provided to assist with the discovery and join process. The LookupLocator class is used to perform unicast discovery and the LookupDiscover class is used for multicast discovery. Regardless of the utility class used, the method of registration with a Lookup service is ultimately the same:

- A *ServiceRegistrar* object is returned by each lookup service
- The service uses the register method of this object to parse a *ServiceItem* object to the lookup service
- The *ServiceItem* object contains a unique identifying number (assigned by the first lookup service that the service registered with), the service object itself and an array of attribute objects (which implement the *Entry* interface).
- The register method returns a *ServiceRegistration* object. This object provides access to the registration information stored in the lookup service including the ServiceID, registration lease and attribute objects. Access to the attribute objects is important, for example, if a printer runs out of paper, the 'paper' attribute would need to be updated in the lookup service to reflect this event. By providing access to the attribute objects the service does not need to be re-registered to update the services state.

### 5.2.4 Lookup

Any client or service that needs to use a type of service can search lookup services for all services matching that type. The lookup method of the *ServiceRegistrar* object (the object that represents a lookup service) parses a *ServiceTemplate* object. The *ServiceTemplate* object contains search parameters allowing a service to be located by ServiceID, type or a combination of attributes. A *ServiceMatches* object is returned by the lookup method. This object contains the associated *ServiceItem* objects of all the matching services that were found. The *ServiceItem* object can then be used to access the matched service.

### 5.3 Leasing

Leasing provides distributed garbage collection and resource management to the Jini architecture. When a client requests the use of a service, the length of time that the service is required is generally provided as part of the

request. A lease will generally be returned with the reference to the service object. It is possible that the lease is for a shorter time than originally requested or the lease will be denied and the client will have to request the service at a later time. If the client requires the service past the expiry of the original lease, the client must renew the lease and continue to do so periodically as long as the service is required. As a result, if the client should fail, the service will be reclaimed for use by other services once the lease expires.

Generally a client should only request a lease long enough to complete the requirement of the service. It is important to understand that the leasing specification does not prevent a poorly designed client or service. It is still possible to create a client that mindlessly renews the lease of a service it has no further use for. It is still possible to create a service that issues leases for a period that is too short and consequently create a large amount of unnecessary network traffic.

A useful Jini idiom is to delegate the responsibility of lease renewal to another class. A sample implementation of such a class is provided with the Jini distribution, *LeaseRenewalManager*. To use the class, the client simply instantiates the class and invokes one of a number of methods that add a lease to its control and specify how the lease should be renewed.

### 5.4 Distributed Events

Events are a commonly used mechanism to provide efficient and loosely coupled asynchronous communication between different objects in both single process and distributed architectures. In a distributed environment, events cannot be guaranteed to arrive in the order they occur or they may not arrive at all. The distributed event model of Jini is an extension of the standard Java event model (which is essentially the Observer[5] design pattern[6]) and has been designed to handle these event delivery issues.

To register for event notification, an event consumer must implement the *RemoteEventListener* interface. This consists of a single method, notify. Generally, event registration requires three parameters to be

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[5] The Observer design pattern is fully described by the Design Patterns book listed in the References section. It is a commonly used means to notify interested objects of a state change in an object.

[6] The concept of a pattern language was created by architect Christopher Alexander. His ideas have been used in software engineering to describe and catalogue important patterns of object-orientated design. Essentially a pattern names and discusses, in a specific format, forces that can be resolved by a rule.

parsed to the event producer:

- A reference to the event consumer. This is used by the event producer to invoke the notify method when an event occurs
- A lease request, specifying how long the registration is required.
- A marshalled (handback) object. As will be discussed shortly, this parameter enables a number of very useful design patterns in the context of distributed events.

Upon registration, the event supplier will return an *EventRegistration* object to the event consumer. This object includes the following information:

- An Event ID, which is a number that is unique to the event supplier and is associated with every event that is issued through this registration.
- A reference to the event supplier, which when used in combination with the Event ID, allows the event consumer to uniquely identify the event type.
- A lease, which specifies the length of time for the initial event registration.
- A sequence number, which indicates the starting sequence number that events from this registration will use. The sequence number is a value that is incremented for each event from a particular registration and allows the event consumer to identify any problems with the delivery of events - such as receiving a duplicate event or events arriving out of order.

When an event consumer receives an event, the event object that is parsed to the notify method includes: The event ID, the event supplier reference, the sequence number associated with this instance and the marshalled object parsed to the event supplier during registration. As stated previously, the specification of an event ID, event supplier reference and event sequence number allow an event consumer to identify event sources and types and, at the very least, identify problems associated with event delivery.

The marshalled object can be used for a variety of purposes, but perhaps the most useful is to enable third party event handling. Generically, this involves using an object other than the real event consumer to act as a proxy event listener on behalf of the real event consumer. Instead of parsing a reference to the real event consumer during registration, a reference to this third party object is parsed instead. The real event consumer reference is parsed as the marshalled object. When an event is sent by the event source, the third party object receives the event, performs its processing and uses the marshalled object (containing the real event consumers object reference) to send the event onto the real event consumer. The benefit of this approach is that the event consumer and the event supplier are decoupled, the third party object acts as a mediator between producer and consumer. As a result different forms of event delivery and

filtering can be implemented by developers, !
such as:

- Store-and-Forward agents, a common idiom
  of asynchronous messaging, where events
  are stored by the agent until they can be
  forwarded to the real event consumer. This
  provides greater reliability and scalability to
  event delivery and allows different levels of
  quality of service to be associated with each
  type of event.
- Event Filters, where an event is intercepted
  before it is delivered and some processing is
  performed on it before it is forwarded (or
  not) on to the real event consumer.
- Event Demultiplexing, where an event filter
  waits for events from multiple sources before
  forwarding a single event to the real event
  consumer.
- Event Mailboxes, an example of 'pull' style
  event notification, where events are stored
  until the real event consumer requests
  delivery.

Any number and type of these forwarding
agents, filters and mailboxes can be chained
together and form any type of delivery policy
required by the event consumer.

### 5.5 Transactions

Jini provides a set of interfaces that define a
lightweight protocol for a style of two-phase
commit similar to many traditional transaction
systems. Two significant differences are that Jini
allows any number of distributed objects to be
involved in the transaction and it leaves the
exact semantics of a transaction to the
individual objects involved in the transaction.

It is this requirement that the developer of a
transactional object (or service) implement
transactional semantics that is the greatest
difference to more traditional transaction
systems. This means that the overhead normally
associated with transactions is quite light as the
functionality normally provided by a
heavyweight transaction manager is
implemented in the transaction participants
themselves (who can choose to implement only
what they need).

To create a transaction in Jini, a client must
first locate a transaction manager service that
implements the *TransactionManager* interface (A
sample implementation is supplied with the Jini
distribution). Once a reference to a service is
found, the client can invoke the create method of
the service specifying a lease duration for the
transaction. The lease duration is the amount of
time the client expects the transaction will take
to complete. The transaction manager service
will return an instance of a class that contains
both the lease and the ID of the created
transaction.

Now that the transaction has been created,
other participants can join the transaction by
invoking the join method of the transaction
manager and parsing an object that implements
the *TransactionParticipant* interface. Once all of
the participants in the transaction have joined,
the client (or another participant) calls the
commit method of the transaction manager
service. The transaction manager service then
calls prepare on every participant, each
participant will return a flag signifying if they
are unchanged, prepared to commit or have
aborted. If any of the participants abort, the
transaction manager service calls the abort
method of each participant, who then roll back
their state, and the transaction fails. If all of the
participants signal that they have not changed
or are prepared, then the transaction manager
service calls commit on each of the participants,
the changes are committed and the transaction
is completed.

### 5.6 Services

Services are defined by their interface, from the
client view of the service there is no difference
between a service implemented locally, remotely
and directly or indirectly in hardware. To be a
usable service, a service must register with
lookup services and be a well behaved member
of those lookup services. This means that it
must:

- Discover and register with appropriate
  lookup services when it starts.
- Listen for multicast announcements from
  lookup services and register with any that
  are appropriate.
- Maintain the following items across restarts
  and crashes:
  - The Service ID assigned by the first
    lookup service it registered with
  - The set of attributes that define the
    service's lookup entry
  - The groups in which the service
    participates in
  - Any specific lookup services that the
    service should register with.
- Maintain all leases in lookup services for as
  long as the service is available

This requires a reasonable amount of effort for
the service implementor. To simplify this
housekeeping, a utility class, *JoinManager*, has
been provided as part of the Jini distribution.
This class, in combination with the
*LeaseRenewalManager* class mentioned
previously, handles all of these required tasks
for a service with the exception of persisting
attributes and service IDs which must be
handled by the service implementation.

## 6. THE SUN COMMUNITY SOURCE LICENSE

Jini is licensed under the terms of the Sun
Community Source License (SCSL), which is the
basis that many other Sun technologies have
been or will be licensed. Each technology is

licensed with a variation of the SCSL most appropriate for the technology. For example the license for the Java 2 source code is considerably more restrictive than that of the license for Jini. The Java 2 version of the license has been designed to enforce compatibility whereas the Jini license was created to promote the widespread adoption and innovation of the technology which is much less established than Java.

The SCSL defines two main roles, the developing organisation and community participant. The developing organisation is generally the originator of the technology being licensed. Community participants are other organisations or individuals who have an interest in building businesses around the technology. In the case of Jini, Sun is the developing organisation and the developers and companies who wish to develop Jini products are community participants.

The objectives of the SCSL are to provide immediate and open access to the technology, increase innovation beyond what a single company could achieve, increase the quality of the technology, allow faster commercialisation and protect intellectual property. To achieve these objectives, the SCSL attempts to blend the advantages of both the proprietary and Open Source license models. Some of the key advantages of the proprietary model incorporated into the SCSL are:

- It provides protection for intellectual property. It is not required that licensees give up any intellectual property rights. The only requirement is that any programming interfaces that extend the platform or infrastructure are open and specified, the details of the implementation can remain proprietary to the organisation.
- It guarantees structured development of the codebase. As the developing organisation, Sun is responsible for moving the codebase forward.
- There is a clear separation of ownership. Sun, as the developing organisation, owns the infrastructure and any upgrades to it but shares this with the licensee community. Licensees can make modifications or create extensions which, as long as they are compatible with the licensed technology, can be either fully shared or kept proprietary as long as an open interface is published.
- Compatibility is controlled. Sun provides both specifications and testing suites for the infrastructure to ensure compatibility.

Some of the advantages of the Open Source model that the SCSL incorporates are:

- The platform is open and has published and specified interfaces.
- A larger number of developers are working with the code promoting both higher quality and innovation
- There is no schedule or priorities imposed

on organisations or developers.

The SCSL for Jini (and the SCSL generally) supports three levels of participation:

- Research and education use, Jini source code is freely available. Developers can use the source code and specifications in any way they like other than deployment.
- For Internal deployment, Jini source code is freely available. However the deployed code must pass a compatibility test.
- For commercial products, Jini source code is available with the Jini trademark for a branding fee. The license fee is based on an annual fee or a royalty for each commercial product branded with the Jini trademark. Revenue from these fees will be used to protect the Jini trademark and ensure compatibility.

Much like Jini itself, the SCSL is a work in progress. It is a first cut in finding a balance between the traditional proprietary model and the open source model. As the requirements of licensees and potential licensees under this license become clearer, the SCSL will be tuned to meet those needs.

## 7. THE JINI COMMUNITY

The Jini Community has been established to create a marketplace for Jini enabled services and devices. At the core of the community is the Jini.org website. This site provides a central place that registered developers can go to share code and involve themselves in discussion forums. Each registered developer with the Jini community is issued with 250kb of storage on the Jini.org website. This can be used to store and share source code and individual web pages. A registered developer can choose to participate in collaborative projects or create their own. When a project is created, 500kb of storage is allocated to the project from the website. This includes mailing lists to enable information to be shared between project members and the wider Jini community.

Many of the community principles and patterns of behaviour are still in an early stage of development. A Jini Community Pattern Language has been initiated to provide a common language to describe and document the principles of the community. For example, one of the organisational patterns described on the Jini.org website is called the Dangerous Waterhole and is presented as:

**Context**: You are trying to create a new marketplace.

**Problem**: Competitors don't drink simultaneously for fear of attack.

**Force**: Competitors don't trust each other.

**Force**: There are no compelling reasons for the

unformed marketplace to be able to be created nor for the result to have any value.

**Force**: You need competitors both to demonstrate the existence and value of the potential marketplace and to fan out in a competition net to find the sweet spots. That is, you need natural selection to work for you.

**Therefore**: Start to build the market with a brand. Associate the brand with quality or compatibility. Give away key technology to a community made up of competitors. Charge a fee for the logo to fund further development of that technology. Make a Safe Place to Share. Recognise that competitors have secrets and want to protect them, but are willing to share secrets for a larger return. Know that competitors are predators and protect the marketplace from sabotage.

Many more of these patterns have been developed and are published on the Jini.org website. Through the website and associated mailing lists all members of the community have the opportunity to determine how the community will organise itself using these organisational (and behavioural) patterns as a common language.

## 8. USEFUL WEBSITES

`http://developer.java.sun.com/developer /products/jini` Download page for the Jini software distribution.

`http://www.jini.org` The Jini Community.

http://www.artima.com/jini/resources An extensive set of Jini related links to online tutorials, books, articles and mailing lists.

## 9. REFERENCES

*The Jini Specification*, Ken Arnold, Bryan O'Sullivan, Robert W. Scheifler, Jim Waldo, Ann Wollrath, Addison-Wesley, 1999

Jini Technology: Distributed Services Programming, Sun Educational Services, 1999

*Jini Community Pattern Language*, Richard P. Gabriel, Ron Goldman, 1999

*Sun Community Source License Principles*, Richard P. Gabriel, William N. Joy, 1999

*Design Patterns*, Eric Gamma, Richard Helm, Ralph Johnson, John Vlissides, Addison-Wesley, 1994

❖

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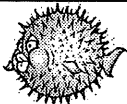
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| ITEM | SIZE | QTY | PRICE | TOTAL |
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| | XXL | | $25.00 | $ |
| Wire Frame design – navy blue background | L | | $25.00 | $ |
| | XL | | $25.00 | $ |
| | XXL | | $25.00 | $ |
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# My Home Network

Frank Crawford
frank@crawford.emu.id.au

Well down to issue three of your favourite column (or at least I like to think so), and straight into some tangential items. At the recent AUUG'99 conference I received a number of comments about the column, so obviously it is read. Most of the comments were of the form, "I've been toying with such ideas for some time, it is good to see others are too". It was obvious that many people are looking at such systems for their homes for a number of reasons.

Secondly, it is also obvious that people are including network cabling in their homes during building or other renovations. I had a few conversations about such plans. The current best practice seems to be to include a couple of phone, UTP and power points in every room in the house, preferably on different sides of the room. This then should run to a single point (e.g. the basement), where a hub is located. Mark White wanted to coin the term "Basement Area Network" or BAN, so if you start seeing mention of it, blame him.

Now following on from my previous column, about hints within PPP that it now supports "demand-dialling", I have tracked down the details. Of course, it to anyone who knows the answer is `RTFM'. After reading all the other documentation, I had a "quick" look at the man page (all 40 pages of it) and what do you know, it was there. Basically, you can start up pppd with a "demand" option. This then initiates the link, but only when data is present on the link, invoking a call script or whatever is needed to setup the connection. This provides much of the functionality of diald, although it doesn't include such things as the ability to ignore certain traffic, etc. Needless to say, this is probably sufficient for most people.

While I was at it, I also found a new option to pppd, "call", which allows you to put all the commands in a single file,

e.g. pppd call ozemail.

In my case the file /etc/ppp/peers/ozemail (i.e. the call argument) contains:

```
/dev/modem 115200
debug
connect '/usr/sbin/chat -f
/etc/ppp/ozemailscript'
user myname
noauth
defaultroute
ipparam ppp0
```

This turns out to be convenient for the occasional connection.

I should add, while this describes pppd (version 2.3.10) on Linux and other Free OS's, Greg Tunnock also send me information about ijppp which runs on FreeBSD, and also has the ability to support demand dialling.

Okay, so now, onto what I want to talk about in this column, sendmail, and general mail addressing. As some of you may remember, in the last column I reported the use of my "new" email address frank@crawford.emu.id.au. What I intend to do is describe how this is setup and how you can do it for yourself.

One of the biggest things about email is that it utilises many of the essentials of the Internet infrastructure. To properly setup, you need to make sure that both your local site and the remote site is addressable and that all the various bits of software along the way can work as required. Now as you generally have little control over the remote end, I'll concentrate on what you need for the local side, and hope that both parties read this article. :-)

Starting at the lowest level, you need to have an address for your site, be it the host or the domain. As well, there needs to be something that can route messages destined for that address to a real address. Basically, this is the function of the Domain Naming System (DNS) and the first requirement that should be setup. This portion of the setup is less technical and far more involved with communications. You need to select a domain to be registered in (e.g. com.au, gov.au, etc.) and contact the hostmaster for that domain requesting registration.

For most people, this is taken care of by their ISP, usually with the transfer of some funds. Those who are more adventurous or just cheaper (:-)) can find other alternatives. For example, I've registered my home network through a domain controlled by AUUG. The domain id.au was established in Australia a number of years ago by Robert Elz to allow for the registration of individuals. It is mainly intended to contain pointers to other addresses, etc, rather than being the main source of registrations. Robert then delegated a number of groups to manage various subdomains of this, and AUUG arranged to be one of those delegated. The domain given to AUUG was emu.id.au (all of the subdomains were named after Australian animals). (Contact netmaster@canb.auug.org.au for more details.)

The management of this domain is controlled by the ACT Chapter, in conjunction with the rest of the AUUG domain (i.e. auug.org.au). Within this domain, I've asked for my "domain" to be registered, although all that has really been specified is what is known as a Mail eXchange or MX record, specifying where mail for a certain "address" should be sent. In fact, about all that has been set up for me is an `A' or address record and an MX record for a host that knows how to find my home network. The relevant parts from dig (a tool to lookup DNS entries) are shown below.

```
% dig @supreme.canb.auug.org.au crawford.emu.id.au ANY

crawford.emu.id.au. 23h58m44s IN A    203.16.204.5
crawford.emu.id.au. 23h59m12s IN MX   10 cnc.cc.ansto.gov.au.
```

While I will not go through the full details of this file, there are a couple of items I will mention. Firstly, you do need to keep up to date with these files, as there are many issues with relaying and mail forwarding. Any decent ISP should be able to help you with this, but if not, I challenge other AUUG members to write something for AUUGN detailing how to handle this.

More interestingly, the A record is almost useless as the address specified is not routed, i.e. no one outside my home network knows how to get to it! However, as far as mail delivery is concerned, the MX record is the important part, it is the next hop in the connection to my network.

Just digressing a bit, mail is different to most common Internet applications in that it is a "store-and-forward" protocol. This means that mail can be dropped off at intermediate sites and then forwarded on from those sites when a connection is established. This used to be very important in the days of UUCP and ACSnet/MHSnet, but is also useful today for sites that are not always connected, such as my home network.

The MX record specifies the location to forward to, if my host can't be contacted directly, which is most of the time. The other advantage of this setup is, if I change my connection, only the MX record needs to be updated to allow mail to continue to flow.

The next step in the delivery of mail is to ensure the MX host knows how to deliver to a "closer" host. In this case, the specified host is one on my network, bits.crawford.emu.id.au, i.e. it has two addresses and two names. It is also my home firewall but more of that in a later column.

In my case, I have a fixed routable address from my work which can be used for delivery, but for the average ISP user this isn't the case. There are two possible solutions, one, pay more money and get a fixed address, or two, register with a sites such as ddns.org which implement schemes to modify DNS names to match changing addresses. Try http://www.ddns.org for more information.

Once you have the transport mechanism sorted out, you need to ensure that you can handle the mail delivery. Despite the claims about many other mail transport agents (MTA) (i.e. the thing that handles the transporting of email from system to system) sendmail is by far the most common and the one most people will have to configure. If you know about other MTAs, then you probably know enough to configure them.

Anyway, the RedHat distribution of sendmail includes a file /etc/sendmail.mc which is the basis for the rest of the configuration files. As well, the package sendmail-cf is the full source for the standard M4 configuration utilities with sendmail. If this package is installed then full details for configuration can be found in /usr/lib/sendmail-cf/README, and you can rebuild the file with the command m4 local.mc > /etc/sendmail.cf where local.mc is your locally made configuration file.

Secondly, and more fun for your home domain, you really want to hide individual machines within your domain and both accept mail destined for your home network, and make everything appear to come from the same domain. I wouldn't get too carried away with this, as it is difficult to stop all details slipping out, but for the most part ensuring that the From address only specifies the local domain on all outgoing mail.

There are two things to be done here, firstly ensure that you accept mail addressed to the domain, and secondly rewrite outgoing addresses to ensure that only the domain appears. To ensure you accept mail destined for the domain you need to add your domain as one of the aliases accepted by sendmail. For example, at my site I have the following in /etc/sendmail.cw:

```
# sendmail.cw - include all aliases
#    for your machine here.
crawford.emu.id.au
```

The actual location of this file is controlled by /etc/sendmail.cf, and is described in the README file.

The reverse part, i.e. ensuring that only the domain appears is a bit more complicated. Either you need to ensure that all outgoing mail is forwarded through one server (likely anyway, as you will probably only have one connection) or else all possible mail servers are configured appropriately.

To ensure that all mail goes through your mail host, you need to specify in the configuration of all the other hosts in your domain that they forward mail to the central host. This is done by specifying in the M4 file used for their configuration, the single line:

```
FEATURE(nullclient, mailhost.$m)
```

which then forwards everything to the host named mailhost in your domain.

On your mail host, you need to include lines of the form:

```
FEATURE(always_add_domain)
MASQUERADE_AS($m)
MASQUERADE_DOMAIN($m)
FEATURE(allmasquerade)
FEATURE(masquerade_entire_domain)
```

and then rebuild your configuration files. I'll leave it to the reader to decode the full meaning of these lines (they are all in the sendmail-cf README file).

There are a bunch of other items that need to be configured, because as you may have noticed I didn't specify my domain, just the variable $m. You do this with the line:

```
DOMAIN(crawford.emu.id.au)
```

and there are file locations which need to be given. If you really do need help, contact me by email and I'll see what I can do to help you.

The final result of all the above is that all your mail will be delivered to your central mail host. You had better ensure that the users are defined, or relevant aliases, but I'll leave that to another time. As well, you really need to be able to read it, it is no good letting it just sit there.

Oh, well, that should be enough for everyone to absorb for now, as usual, I'd like to hear what you are doing, corrections to any errors I've made (not that I have) and any other general comments.

As a special bonus, Terry Collins has sent me details of how his home network came about. It certainly seems to be far more commercial than anything I've done so far. I hope you enjoy it.

❖
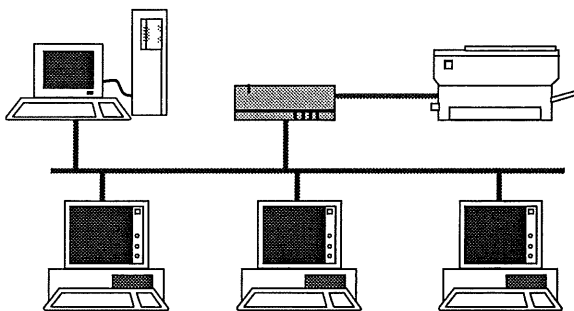
## My Home Network, part deux:

# Terry's Home Network

Terry Collins
terryc@woa.com.au

Frank's article and column in AUUG have finally prompted me to put fingers to the keyboard about the 'our' (SWMBO & I) home network. It does require a little bit of history to understand why it is so, so here goes.

It wasn't until the mid 80's that the first PC entered this household. Bicycle Australia, a non-

profit association had falling incomes and needed to exit rented property fast. As the kids hadn't arrived, the back room (the green room) was empty and their office moved in there. Their computing grunt was the mighty Portapak, an Australian luggable, for those old hands who may know of it.

These were a beautiful machine of their time; twin 784K 5" floppies, serial, parallel and universal IO sockets and an internal 300 baud modem. It was accompanied by a daisy wheel printer, which is something to experience when in full flight.

Unfortunately by the time it arrived, the manufacturers had gone broke and it was an orphan and we had finally lost contact with the original service technician following a series of fast job changes. It came with an annoying habit of a shrinking screen image as it warmed up. The solution of sans case and 16" fan on high was acceptable in summer, but not in winter.

AS BA was skint, a successful submission was made to the CFO (SWMBO) and a 286 with 640K of RAM and a massive 40Mb hard disk arrived to support my interest. The upgrade to 1Mb of RAM was well beyond the budget at that time. Software was MS DOS 3.3 with Wordperfect 4.2 & Dbase III+. Output was a 24-pin dot matrix, which was much quieter than the old daisy wheel that often hammered away 24 hours a day addressing labels and producing membership renewal letters and other admin tasks.

The upgrade to a 386 (mobo replacement) happened when 'someone' plugged the oil heater into the power filter beside the computer. I missed the sparks but an embarrassed CFO wasn't too hard on the justification submission for the replacement (and why not upgrade at the same time - it is an investment for the future {:-)

Somewhere along the line, the internal modem from the portapak was replaced by a maestro external and I resumed contact with the outside world through BBSs and Fidonet.

My partner and companion, who is a teacher, suddenly found the computer was useful for doing school related preparation and reports, submissions to council, government, funding bodies, etc, etc. This meant that a queue was developing behind the little box most evenings. So the inevitable second machine was purchased - just a modest 486SX25 with 4MB RAM and a 100Mb hard disk.

Soon after, a laser printer came on the scene - an ex-demo Gestetner postscript based on the Canon SX engine - still the most cost effective laser printer engine ever. Whilst our little printer has only produced 40K pages over the last decade, some of these have produced over 1 million pages in high use sites.

Of course, the inevidable clash of demand for resources occurred - drafts on the dot matrix and final product on the laser and sneaker net

between them. At that time, Novell released their peer to peer network Version 1.0 (yep, with all the version1.0 problems). So a thinnet (what else!) network was established.

This situation continued for a few months with the almost nightly reboots to reestablish networking, until the opportunity to acquire Novell Netware 3.11 arose and was gladly snaffled.

Hardware was acquired in what has become the time honoured method of adding bits and pieces together combined with the trickle down effect. This brought the first VESA local bus motherboard onto the site. What a rash decision that was! The CPU 486DX50 was the first of the 50Mhz bus motherboards and was mostly reliable, but certain combinations of hardware did prove unstable.

My policy is to wait a year after new hardware comes out to avoid the inevitable problems. For some time our little home network consisted of just my 486DX50 running Win3.1, SWMBO's 486DX25 running DOS 5.0 and the little 386 Novell server under Netware 3.11 then 3.12.

This blissful scene was disturbed by an innocuous remark that "if you can not find someone else, then I'll take it on". Wham! Telstra was knocking at the door. So once everyone was calmed down (CFO as well - it was the fax line I think then-Why!), I was now the proud keeper of an OS/2 BBS running on a 486DX33 with the enormous capacity of 1Gb (more about this later). This BBS also had the first SCSI devices to enter the home setup.

SCSI's ability to string eight devices on the one bus allows a club to cobble together the most amazing array of pre-used equipment to keep their BBSs going. The result was that this BBS, in an attempt to cater for growing disk space needs was eventually stuffed with four full height 5" hard disks and thus had wonderful heating capacity. Great in winter, but decidedly a non-survivor in a northerly aspect room in summer. A solution to this was to fit an extra fan for greater forced ventilation. This turned out to be a mixed blessing as the already tandem ganged power supply fan was failing and eventually ran backwards from the suction of this 'good, strong' fan. Another unfortunate side effect was the vacum cleaner effect of this forced ventilation.

Lightning was actually the next growth stimulant. At the time, it seems our phone lines went over the crown of the nearby hill and the inevitable summer storms entered the telephone lines with disasterous results. So the software based fax machine came onto the scene – cheap sacrificial hardware from all the old bits. The BBS inevitablywent throught rebuilds as items died, or it was expanded (two lines now) and was joined by my own public BBS as the original BBS was restricted to club members.

This second BBS was another 486DX33 box cobbled together from parts and running OS/2. If you have never played with OS/2 in a PC network, you have missed something wonderful. After trying to shoehorn IPX, NetBEUI and TCP/IP networking into the DOS 640K, plus OS TSR's and then programs, networking under OS/2 is exceedingly easy (provided you follow instructions exactly). Everything talked to everything else, except the two Win3.1 boxes, but shared files for them resided on the Novell server, so no loss there.

The inevitable lost file, particularly the CFO's, was sufficent justification for obtaining a tape backup unit. An old QIC tape unit was just the right price and survived for a few years until the funds could purchase our first DAT drive (DDS1) for the Novell server.

Along the way, the first Linux box arrived. Part of the justification for the home computers has been to maintain and improve my work skills. So when unix boxes were added to my admin work, it was inevitable that I would seek a Unix box on Intel hardware. Linux was and still is just the shot.

Around this time, the Internet arrived and after one year to let it sort itself out, and to allow access prices to drop significantly, (with heavy impact on usage of the two BBSs) I acquired an email and WWW account with the unix box taking on the roll of mail collector, WWW browsing and the 1,001 other things you can do.

Things didn't humm along quietly for long (once the BBS was rebuilt from the last failure). I was one of four sysops in the computer club and we organised to make available the latest shareware off the Internet, Fidonet and other places from our BBSs, thus saving members valuable download time. The only trouble was the growth in available files. What started at 1 CD worth/two months, rapidly became 2 CD's/month.

The 1Gb hard disk in the first BBS had died and been replaced by a 4Gb, but that was overflowing, so the home network acquired another linux box running samba to act as a file server to the two OS/2 BBSs. This box was of gigantic storage proportions compared to anything else – it held 18Gb of files. It was also a watershed device where the SCSI train was purchased new for the purpose and an indicator that most computer hardware had become exceedingly cheap. The joke was that this machine was very low powered and ran on an old 486DX33 with 32Mb of ram and no caching chips. Linux was quite able to handle the demands from three users on the two BBS's and yours truly simultaneously, provided I didn't try moving files around.

About this time I acquired a proper monitor, mouse and keyboard sharer. Whilst it was easy to shoehorn seven boxes into the room, there was no way I could fit, or would ever need seven monitors. So this little device enabled all boxes to be easily controlled. However, it was technology definitely beyond the ken of the CFO and her box has always been a separate affair. The fax machine was also a separate, complete entity as this wonderful piece of technology was now in demand

by the CFO. It was decidedly easier to do this and surrender the scanner than handle repeated requests to fax this or that. The CFO has reluctantly learnt how to send both paper and virtual faxes, although checking for incoming faxes took a bit of getting used to. You can tell by a hovering prescence that she is expecting an incoming fax {:-).

Windows 95 arrived on the scene about two years ago when the Novell server was upgraded to Novell 4.11. It was needed to run the administration software for the server. It was shoehorned onto an early 486DX33 which survives simply for this purpose. The OS failed miserably the only other task requested of it, which was CD jukebox. It keeps unloading the playing CD to check on the other CDs and continually wants the OS CD to reinstall the sound card drivers.

Following the upgrade of the Novell software (it still runs on a 486DX2/66 with 32Mb of RAM, although the hard disk is now 2Gb SCSI), the tape drive advanced to DAT DDS2 . I realised that things were getting serious when the CFO wasn't blinking when I requested an order of twenty new tapes to feed it. At this stage, various proprietary demo software was replaced by Arcserve on the Novell, which adequately backed up seven Wintel machines. The linux boxes shared the older DDS-1 drive.

The CFO is the worst of users - is quite happy with DOS and wants everything to run on it and "why can't you find that file I created seven years ago". I don't dare answer that it is probably because I've chopped up and thrown out the 300 5" floppies that were our backup system then. I had to throw them out as there was no way I was going to ever use them and the joke of offering them as prizes for computer club raffles wore thin very quickly.

Soon after, the first BBS departed following a falling out of sysops and computer club management. Its departure was not unwelcome as it had never received the resources it needed and it relied on people's generous donations of old hardware, which inevitably failed.

My habit of collecting old bits and pieces of computers led to a computer market purchase of an old DEC Multia with Pentium 100 chip. I think it appealed because like the old Portapack, it had everything (except monitor, mouse and keyboard) built into a compact package; 2 serial, parallel, SCSI, 2 PCMCIA and networking (AUI, BNC & UTP), . This box was definitely an exception to the rule. All purchased boxes here are full towers with almost standard pc compatible wintel hardware. The only discrepancies were some from a clean up at a contract site ('I will take it all away if you give it all to me').

This was an opportunity to establish an NT box, so first 3.51, then 4.0 were installed on it. NT was given a run as apart from looking good on the resume, Win95 was decidedly unstable and I needed a system to the create CD's full of files off

the BBS for a commercial venture. Linux CD burning was still at the craft stage and I didn't have time to learn it's ways. This arrangement survived until it was decided that as a commercial event, it wasn't and NT lost the CD burner and external hard disk. The box survives as an NT system because it looks good on my resume and just occassionally I have to read a document that someone sends in word or excel format, although Applixware on Linux does this very well now. (Humm, must reconsider that decision someday.)

Perhaps this is a good opportunity to explain - this is a Wordperfect shop - full stop. The CFO is happy with Wordperfect for DOS 5.0, although an overwhelming need for WYSIWIG layout occassionally sends her into WordPefect for Windows. The only other crack is that the fax and scanner software runs on MS Win3.11 on the fax machine. We have published a book with it and used it for various mailout, submissions and other printing jobs. The only embarrasing point is that posters for the Linux events I help organise for my local LUG (Linux Users Group) actually come out of CorelDraw on a Win.311 machine.

Our interests and the sudden need to do submissions, or produce a few thousand brochures or leaflets for various community organisations means we are serious about printing here. This is why the opportunity to pick up an Axis print server at a good price for the home network was gladly taken. Apart from the fact that they are the most reliable print server I have every used, their multi protocol support allows just about everything here to talk to them. The only problem is the Win3.11 boxes, but the Novell server ably covers this lack.

The major problem with printers is where to put them all. There is still the original 24 pin dot matrix, good for the quick text file printing, then the A4 postscript laser, a good canon SX engine, but these were joined somewhere along the line by a HPGL A3 laser printer, for the A3 size and a second printer when the postscript gets the 'flu'. Inkjets have always left me cold and recent experiences with a specially modified and rather expensive one for printing onto CD's for the above business venture was a technological and economic disaster, so the sighting of a 30% drop in entry colour lasers will keep me sharpening the pencils on a justification to the CFO. Humm, perhaps I will encourage SWMBO to do the second year of her colour and design course. She might suddenly have a need for one and who needs a justification then {:-). (That thought just got shot down in flames - SWMBO is my spell and grammar checker and some big, red No's just appeared - Oh well).

Suddenly, we are on the internet fulltime. An offer to swap access to the 18Gb of BBS files for full time dial up internet access was too good to pass up. As  I was now contracting this was an opportunity to run my own internet site and demonstrate online my modest skills in that area.

Suddenly the issues for home were DNS, mail (the

CFO now wants her own email address), newsgroups (mainly for the public BBS) and our own WWW site without the limitations on commercial sites.

We even progressed to a webcam when someone loaned me a industrial camera and a capture card. This just points at the lovely gum tree in the back yard, which is nice to view full screen during a stressful day at the office. Unfortunately plans to retire from advertising on the WWW site died when our cats declined to provide a live floor show. As they already get a tin of cat food each a day, they just couldn't understand why they should have to now perform tricks for it. However, the webcam is now a permanent feature

It use has paid off in a funny way. CFO rings up one evening whilst I was working late to say the TV is on the blink, 'Just a minute' - webcam revealed that the temporary TV aerial had toppled and was now buried into the orange tree. Surprised but satisfied, she declined to go out and fix it up.

Both BBSs are now history and a second montior switch has joined the first. The thinnet is now mostly gone, thanks to a few mysterious failures right when the CFO urgently needed something printed. A better quality hub now connects everything reliably. My conscience is clear and my knees no longer hurt from the regular checking of thinnet T pieces. It is amazing how much dust computers attact!

There was a brief expansion to about 15 systems as various versions of linux and linux desktops were built for PC-IT 99 in Sydney. In truth, I became fed up with having to thread around them and the situation was worse as we were having renovations with junk^h^h^h^h^h^h useful bits of paraphenalia stored everywhere. The result was a clean out and we are back to eleven boxes.

What do they do? Well, CFO & I each have a Win3.11 box, then there is the fax and scanner box, the firewall box, the novell server, the Win95 box to administer the novell server, the WinNT4 box for very occassional use and the four other linux boxes.

Bluewren is one of those proprietary desktop boxes that someone has loaned me on this occasion whilst he borrows other hardware. It actually spends all of its time looking for signs of aliens for the Seti@Home project. These four linux boxes were all part of distributed.net - a demonstration distributed computing project which stretched around the world via the internet. Apart from showing how easily it was to crack the ridiculously short encrytion keys governments allowed, distributed.net has not undertaken any useful practical computing projects, so the spare CPU cycles were moved to Seti@Home.

Eagle is my workday linux box and the dns, mail and WWW server. Cicada is my Caldera Linux box, established to play and use Caldea Linux because of its Netware linking capacity. It is now the

samba server following the demise of teatree, which faithfully served the BBSs.

Owl is the latest and greatest and the first purchased AMD chip, part of a small bit to ensure that Intel doesn't get a monopoly. Currently it has a life as a games box, the first ever, but will soon take over the forground roles of Eagle (my mail, news and WWW reading).

It has always been difficult to draw the line now between a true home network and a SOHO affair. The emphasis all along has been on getting work done for various interests, but hardware tinkering has been a hobby that has seen a lot of boxes built up because the parts were there. So once you build it, you might as well make use of it. And once you have it, suddenly other opportunities arise.

Tonight I'm trying to use the sound card and software to record an Eastern Banjo Frog in bonk mode (the sound and possibly the activity) that has suddenly appeared in our back yard. Now, if I can just get rid of the hum and whistle that 50 feet of cable pick up and get a good photo to scan, the sound file and image can be put on our WWW page. Hey! -what was that - was it another frog species, or a car in the distance? Humm, I wonder if I can interest the CFO in a good quality sound card (pity she gave up the music keyboard - that rules out the midi approach).

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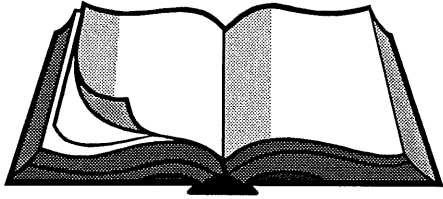CD-ROM courses or Sun Certification programs, phone:

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**http://www.sun.com.au/services/education**

Priority code AV20102

# Book Reviews

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## LEARNING RED HAT LINUX

*Bill McCarthy; O'Reilly, 1999*
*ISBN 1-56592-627-7*

Bill McCarthy is an associate professor of management information systems in the School of Business of Azusa Pacific University in California and, coupled with 15 years experience as a software developer, he clearly knows a few things about operating systems in general, and Linux in particular.

But I think he bit off a little more than he could chew when he made the following statement in the Preface of his book:

> "If you work with Microsoft Windows and have dabbled a bit in MSDOS, or are curious about what happens inside Windows, you can install and configure Linux"

The book was written, he tells us, for those who are curious about "what Linux is about and whether you should give it a try".

Given that he paints Windows users and MSDOS dabblers as his target audience, I was surprised that this book did not offer more hand-holding.

Don't get me wrong. It is a solid book with a logical structure. It introduces the reader to the pros and cons of running Linux, and helps them decide whether Linux is for them.

If so, it explains the minimum hardware required, and then guides the user through the process of preparing their PC for installation and then through installation and configuration process itself.

The book has a particular emphasis on Red Hat Linux, a copy of which is included on the CDROM accompanying the book.

Perhaps I am being a little harsh, given that the book is titled "Learning Red Hat Linux", not "Installing Red Hat Linux". But the promotional "blurbs" in the Preface and on the back cover clearly represent the book as one written for the "Linux neophyte".

The chapter on preparing for installation goes to some length instructing users how to document their hardware. But it fails to go the extra step of reminding them to document with precision - down to the IRQ level at least - before attempting an install, especially when dealing with finicky hardware such as network cards.

Further, the author appears to assume more technical competence than is warranted in the introductory chapters, especially in the section on configuring network adaptors and IP addresses. Many new to the Linux OS are looking to use it as a platform for Internet exploration. If they are "neophytes", they will need more assistance than the author provides.

Although McCarthy details each step in the installation and configuration process at length, I was quite surprised by the lack of instructions on how to deal with error messages or where to turn in the event that the configuration options don't support your hardware. Readers are generally referred to the Red Hat Web site (www.redhat.com), but more could be done here.

As mentioned earlier, the remainder of the book, which covers a cross-section of Linux installation, configuration and operational topics, including "Getting connected to the Internet", "Using Linux Applications and Clients" and (certainly the most important of all) "Playing Linux Games", are solid and usefully illustrated with screenshots and detailed command syntaxes.

I wouldn't recommend this book to the average Windows user. I would, however, recommend it to advanced Windows users and PC enthusiasts who aren't afraid to dig beneath the desktop. This book will also be useful for technically competent Unix users and administrators trying to keep abreast of the various new "flavours" of Linux that are finding their way into the computing environment.

❖
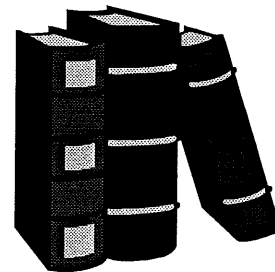
## UPGRADING & REPAIRING PCs (ELEVENTH EDITION)

*Scott Muellers; Que, 1999*
*ISBN 0-7897-1903-7*

Scott Mueller's _Upgrading and Repairing PCs_ is the kind of book that lands on your desk with a thump. Just looking at it is reassuring. It is a no-nonsense, detailed, technical guide, available in

both soft- and hard-cover, that will make even the most timid user or administrator feel secure when installing new hardware or connecting a peripheral.

The book itself runs to 1628 densely printed, but well structured and laid-out pages. It covers all things PC, starting with the history of computing devices, then taking readers on a tour of each individual component found in modern computers.

Motherboards, BIOSs, IDE and SCSI interfaces, storage media, video devices, printers, scanners, network cards, and even LAN, WAN and Internet connectivity are covered in detail. Mueller also canvasses the history of each hardware specification, where appropriate, in order to better put it into context.

This book is rounded off with chapters on building and upgrading PCs, troubleshooting faults and data recovery.

It is not a cheap book. In some stores it sells for over $100. If the book stopped there, it would be worth every cent. But it doesn't.

The accompanying CD contains full, licensed copies of several handy PC tools, including Partition Magic. It also contains a plethora of useful technical documentation and reference databases. Meuller has also included full, digital copies of earlier editions of the book (as PDFs), which users can refer to if they need details of legacy technologies no longer covered in the current edition.

Meuller's writing style is laid-back, unassuming and easy to digest. In certain parts he is clearly talking to readers with some technical background. But for the main, the book will suit both the intermediate and advanced user interested in better learning how their PC works, or what their options are for either upgrading or replacing it with a new system.

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# The Open Source Lucky Dip

Con Zymaris
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"Don't give me any technical reason why something can't be done. If you really believed in the product you'd make it work." - *From a Marketing type*

Hello all.

I hope this becomes the first part of an ongoing series on useful open source (and other) applications which can be deployed on Un*x and Linux systems. In many or maybe even most cases, I will not have had much time to play with the applications mentioned herein, but present them here to bring them to your attention, for you to try them and perhaps propel their use throughout your organisation. As such, caveat emptor! Be sure to check the applications out in some detail before progressing too far with deployment.

By way of starting this column, let's look at perhaps the most useful online resource that you can use to scan for new and possibly useful applications in between the re-appearance of of the AUUGNs.

**FRESHMEAT**: `http://freshmeat.net/`

"Beware of bugs in the above code; I have only proved it correct, not tried it" - *Donald Knuth*

Onto our apps for this issue:

## APACHE JSERV

Java based servlets have become a compelling vehicle for deploying Java technology through an increasing number of organisations. And what better way to deploy a Java servlet engine than through the World's favourite web server? Apache JServ is now on version 1.1b1. It is a Java servlet engine; an external process written in Java which runs separate from the web server and handles requests to Java servlets. mod_jserv is an Apache HTTPD module written in C which provides an interface to the Apache JServ engine.

```
Homepage: http://java.apache.org/
Author: The Java Apache Project
License: BSD type
```

## AVENGER'S NEWS SYSTEM 2.01

Have you ever wanted to establish your own Slashdot news posting system? Avenger's News System is, according to its author, an easy-to-use and easy-to-configure online news posting system that does not require a SQL server. Configuration and HTML editing is all done online. Additionally,

PERL scripts can be run from HTML code.

```
Download: http://ans.gq.nu/ans-2.01.tar.gz
Homepage: http://ans.gq.nu/
Author: Avenger
License: BSD type
Depends on: PERL
```

## BRAHMS

For those of you who are serious about your music composition, Brahms is touted by its author as a sequencer and music notation program with several editing methods so far including; Score-, Pianoroll-, Drum-, and Mastertrack Editors. For C++ programmers, it is easy to implement further editors by deriving from a general editor-class. MIDI Import and Export is also implemented. In combination with aRts-0.3.4, one can play wave-files and make use of the midibus to send midi-events to the software synthesizer.

```
Download: http://www.stud.uni-hamburg.de/~arts/
download/Brahms-0.97.1.tar.gz
Homepage: http://lienhard.desy.de/mackag/
homepages/jan/Brahms/
Author: Jan Wuerthner
License: GPL
```

## COMMON UNIX PRINTING SYSTEM 1.0

For some time now, the Unix world has had what many believe is a weakness in printer control subsystems and software. Enter an organisation called Easy Software Products, who have recently released 'The Common UNIX Printing System'. CUPS provides a portable printing layer for UNIX® operating systems. It was developed to promote a standard printing solution for all UNIX vendors and users. CUPS provides the System V and Berkeley command-line interfaces. CUPS uses the Internet Printing Protocol (IETF-IPP) as the basis for managing print jobs and queues. The Line Printer Daemon (LPD, RFC1179), Server Message Block (SMB), and AppSocket protocols are also supported with reduced functionality. CUPS adds network printer browsing and PostScript Printer Description ("PPD")-based printing options to support real world applications under UNIX and a customized version of GNU GhostScript.

```
Download: http://www.cups.org/software.html
Homepage: http://www.cups.org/
Author: Easy Software Products
License: GPL
```

## COMPUPIC

If you're after an excellent end-user photo and picture viewer, then look no further than Compupic. While not open source, it is available 'gratis' for non-commercial use. Developed by Photodex Corporation, CompuPic is an interactive multimedia file manager and manipulation program which allows you to efficiently view,

manage, catalog, thumbnail, and convert over 30 graphics formats. CompuPic is the first consumer-oriented graphics software to be ported to Linux from Windows.

Homepage: http://linux.compupic.com/
Author: Photodex Corporation
License: free for non-commercial use
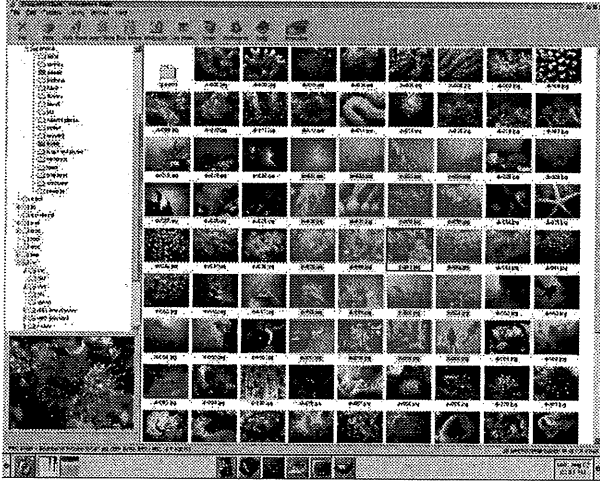


## CYCAS

There are several CAD packages available for the free Unices, and of course many of the high-end systems like MicroStation are available as well (to read about MicroStation for Linux, visit http://www.bentley.com/ema/academic/aclinux.htm) Among the newer entrants in this market is CYCAS, which is a new 2D/3D CAD software for Linux. It offers typical CAD functions and special architectural features to design and build architecture easily. The 3D data you create can be exported to render programs such as Lightwave, Real3D and POV-Ray. The CYCAS 1.93 demo version for Linux/x86 is free to download.

Download: http://www.cycas.de/linux/edown.html
Homepage: http://www.cycas.de/
Author: Verlag Frese
License: commercial
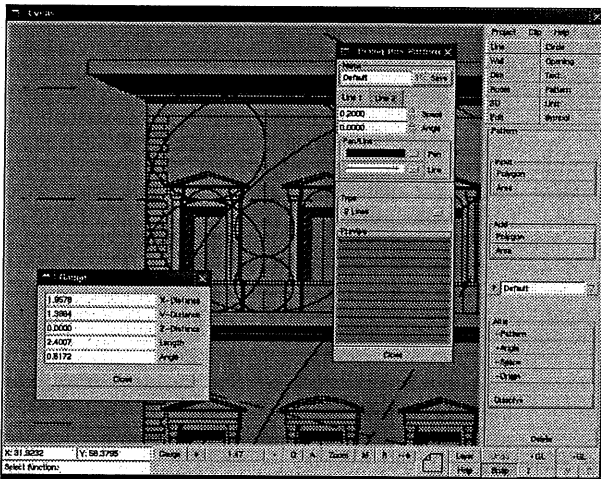


## ETHERBOOT 4.2.9

Most Unix people don't need to be convinced of the great technical and TCO advantages thin-client systems can bring to large sites. While NCs didn't make the marketing 'survival of the fittest' cut-off, their promise is being realised nowadays by an ever increasing number of 'thin-client' systems. Etherboot can be seen as the vehicle through which you can make your own thin-client workstations, using low-end PCs. Etherboot is described as a free software package for making boot ROMS for booting Linux and other operating systems on x86 PCs over a network using Internet Protocols, i.e. bootp/DHCP and tftp. This new version includes 3c90x (but not 3c905c) and multiple PCI bus support, NT-Diskless-Terminal HOWTO, snapshot of hpa-tftp, a.out and ELF loading code cleanup, various small code and documentation fixes. The developers also seem to be in Australia, thus furthering our reputation as a leading nation for open source projects.

Download: http://www.slug.org.au/etherboot/etherboot-4.2.9.tar.gz
Homepage: http://www.slug.org.au/etherboot/
Author: Ken Yap
License: OpenSource

## FREETDS

Have you ever been at a site where you need to connect your Unix Perl scripts to the database, only to be told that the site uses MS SQL Server? Where do you want to go now? *g* The last thing you want to do is migrate your scripts away from a reliable platform like Unix, but then MS SQL Server only runs on NT (funny that ;-) So, short of convincing your site that they should look at Sybase on Unix instead of MS SQL Server under NT, you may find that FreeTDS is the answer. FreeTDS is an open source implementation of the TDS (Tabular DataStream) database client access protocol and related libraries used by Sybase and Microsoft. For those that do not know, Microsoft's SQL Server is in reality a hack of Sybase's SQL Server, ported by Microsoft originally to which platform? NT you say? Nay. Try OS/2 ! Sybase SQL and MS SQL servers share much in common. One look at the underlying system table names, and the shared SQL dialect (Transact SQL) will reveal this. In fact, the two where pretty much identical until MS SQL Server 6.0 from a few years back. By now, they've started to diverge. Regardless, FreeTDS supports versions 4.2, 4.6, and 5.0 of the protocol, and it supports DB-Lib, CT-Lib, and ODBC libraries. The latest version of FreeTDS (0.47) is a bug fix release. Notable changes include a work around for bugs in MS SQL Server 7.0 when connecting from big endian machines, working better with the DBD::Sybase perl library, and many more.

Download: ftp://metalab.unc.edu/pub/Linux/ALPHA/freetds/freetds-0.47.tgz
Homepage: http://www.freetds.org/
Author: Brian Bruns
License: LGPL

"Technology is dominated by two types of people: Those who understand what they do not manage. Those who manage what they do not understand." - *Putt's Law*

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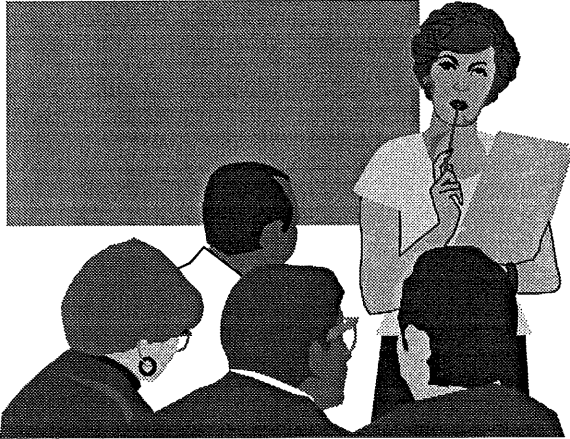


Conference News:

# What's on at USENIX

Full tutorial and technical session programs, and online registration, are available at http://www.usenix.org/events/ for the following:

**TCL/2K: 7TH USENIX TCL/TK CONFERENCE**
February 14-18, 2000, Austin, Texas
Extended abstracts due: September 1, 1999

✧    ✧    ✧

The USENIX Association supports user groups worldwide. We have recently inaugurated several programs to further this goal:

## CO-SPONSORSHIP OF CONFERENCES & INTERNATIONAL AFFILIATE PROGRAM

There are many different models for affiliate membership or co-sponsorship; contact the Executive Director at ellie@usenix.org

## INTERNATIONAL SPEAKERS PROGRAM

http://www.usenix.org/membership/intnl_speakers.html

## USER GROUPS ON THE USENIX WEB SITE

http://www.usenix.org/membership/ugs.html

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## Chapter News:

# Queensland

Mark White
mwhite@redhat.com

It's been a busy few months for the Queensland Chapter! Following the AUUG national conference (see my Chapter BOF notes elsewhere in this edition), I presented a review of Open Source/AUUG99 at the September meeting. The conference was a great success, with Queenslanders Michi Henning and Greg Ungerer presenting. Michi in particular earns congratulations for being one of the most popular sessions with his "Computing Fallicies" paper, while Greg described the experience of using Linux as an embedded system, in particular porting to Motorola's ColdFire processor board.

In October, QAUUG welcomed Bill Segall, Senior Research Scientist from DSTC. With David Arnold's able assistance, Bill described and demonstrated DSTC's work on Elvin, a publish-subscribe notification service where consumers use content-based addressing to select notifications of interest.

Under development since 1993, Elvin delivers unaddressed notifications which are received on the basis of the notification's content. Consumers subscribe to announcements satisfying some constraints over their contents.

There's a myriad of potential uses for such a technology, and Bill highlighted such projects as network management, group collaboration, source code repository checkins, and - my personal favourite - makeing a Usenet feed usable again. Bill and David went on to demonstrated Elvin working over a LAN and dial-up network connection, as well as the event-subscribe framework and the C and Python language bindings. As always with QAUUG meetings, much discussion was generated, and enjoyed over beer and munchies.

Thanks and congratulations to Bill and David for an enjoyable talk. We're always looking for interesting speakers and topics, so if you've ideas for a talk, please drop me a note. Next month (November – the last QAUUG for the Millenium!) we hope to have Jan Newmarch drop by to talk about Java, Jini, and all sorts of interesting things.

The AUUG Queensland Chapter (QAUUG) hold meetings on the last Tuesday of every month from 7:00pm, at the Inn on the Park, Coronation Drive Auchenflower. Meeting announcements are made by e-mail and anyone is welcome to attend. To join the qauug mailing list, simply send an e-mail to majordomo@auug.org.au with the comment "subscribe qauug [your-e-mail address]" in the message body.

And finally - as you may have guessed - I have a new job, establishing Red Hat's operations in the Asia-Pacific region. We're looking to establish engineering and technical support facilities in Australia for the whole region - so if you're interested, please drop me a line.

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## Chapter News:

# BOF Discussion during AUUG'99

Mark White
Mark.White@auug.org.au

AUUG Chapter Folks

During AUUG99 in Melbourne, I chaired a BOF session on the status of the chapters in each state; and thanks to all whom participated in what was an open and frank discussion. With David Newall's assistance, I have collated a summary of what was discussed. There were a lot of common issues; with each of these I have tried to propose an ACTION that AUUG can take quickly to assist in the growth and value of the local chapters.

Please take the time to review the following and let me know your comments and further suggestions. I believe that not only are there some simple, fundamental things we can do - but that doing them quickly is imperative to the ongoing viability of the chapters. Many of you will remember a more buoyant time for AUUG - and ironically there has never been a more interesting time to be part of the Open Systems/Open Source/UNIX community.

I think we can work together to get things back on track.

I look forward to your feedback!

Yours sincerely

Mark White
Vice President
AUUG Inc.

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## NOTES FROM CHAPTER BOF
Held Wednesday, September 8th 1999
Carlton Crest Hotel Melbourne

The BOF was attended by representatives from NSW, Vic, Qld, WA & SA chapters. Issues are numbered according to the order raised, not necessarily by priority:

**1. Lack of quality speakers is hurting chapter events.**

**ACTION:** AUUG to provide a speaker register for chapters. To be a clearing house of not only

speakers but ideas and experiences on what went well.

**2. Co-ordination of Chapter Events (monthly or conferences) was requested to see if speakers can be shared, or whether travelling speakers can plan to visit other chapters in conjunction with business travels.**

**ACTION**: AUUG needs to create and share a common calendar of events. Ideally chapters should be able to see around 3 months visibility of all national and chapter events on a rolling basis.

**3. Membership is Down.**

Chapters would like to see:
- A planned targeted recruitment drive, aimed at CS students, and free *nix users
- A common "recruitment kit", for local chapters to use to present AUUG to other audiences

**ACTION**: Membership kit needs to be defined. I'd suggest we need to do something like:
- A better 1-page AUUG introduction brochure/membership form
- A short piece of slideware about AUUG and the UNIX communities
- Articles that local folks can get into ACS newsletters etc.

**4. Focus of AUUG is "fuzzy".**

We're seen as "business computing" by some technical users, and "technical geeks" by some business folks.

**ACTION**: Deeper issue - we need to define and articulate a vision and focus for AUUG. Suggest we can attempt to get this ready for ratification at the management weekend in October.

**5/6. Discussions around the various LUGs and other groups which don't necessarily see the value proposition of AUUG.**

Also a suggestion that perhaps the Linux folks didn't see themselves as "UNIX" users (Linux != UNIX?)

**ACTION**: See above. We need to - and IMHO we desperately need to – clearly define and articulate a value proposition here that will be of relevance to these groups. ,

**7. A final point is that AUUG chapters are typically organised by the same folks who have done this for years, without much assistance or support. As such there's a feeling of tiredness.**

This could best be addressed by some "new blood" to assist - as such beefing up the membership and activity could help.

Chapter News:
# From the Treasurer

Luigi Cantoni
Luigi.Cantoni@auug.org.au

Hi all Chapters out there.

This is just a little note to explain some of the changes that I am hoping will ease the administration for both the Chapters and the central Business office of AUUG.

At the moment the West Australian, Northern Territory and South Australian (when it becomes active) Chapters will be using this new structure. After a period of trial this method will be offered to the other Chapters. I look forward to feed back from these chapters and suggestions from the others.

Anyway enough of the lead up. What exactly is proposed?

Firstly it would be really a good idea if budgets are put forward from the Chapters. They are not formal budgets, as such, rather an indication of what is going to be happening. For most of the year it will simply be what expenses are expected for meetings etc. If some special Roadshow or Symposium item is occuring, then the budget will be reflect these additional events. Once again the AUUG Business Manager will be working with the Chapters on this and so she will be helping with the budget creation etc.

OK; that's the really hard bit done.

Now that we have an idea of what will be happening, all that needs to happen is for the invoices to be sent directly to the AUUG mailing address (the PO Box; see the front page of AUUGN or see your membership card). We have setup procedures already for making sure all invoices that are received will be paid promptly.

If some unusual or unexpected item arises then, all it will take is for two members from the Chapter Exec to email the Business Manager and explain the item, it will then be paid when it arrives. Please no new sports cars. It really will work best if you email as soon as you know, then we will be expecting the invoice when it arrives. This will save time when chasing about wondering, what it is all about.

All accounts should be sent on to our Business office should all include clear identification of the Chapter's name and also who is authorising it eg AUUG (WA) or WAUUG authorised John Smith.

The Business manager will email periodically a listing of all accounts paid, on behalf of each Chapter, to the Exec of that Chapter, so they can see what has been processed.

In a few months the three Chapters on this system will also be offered the assistance of the AUUG

Business Manager for Chapter mail-outs. The Business Manager will send out (by what ever method the Chapter chooses) the meeting notices etc. to all members in the Chapter area, as well as any other interested parties the Chapter nominates. The only thing the Chapter needs do is email two versions of the notice (plain text for email and WP version for printing) to the Business Manager. The rest will be done from the AUUG office, on the Chapter's behalf.

The aim of this idea is to reduce the Chapter administration: the Chapter's need only advise the Business Manager of any changes to the lists; any other changes done via the AUUG office will be done automatically. Under the current system; the two lists are not necessarily synchronised.

I hope this simplified method of account keeping etc will free up the Chapter Exec's to do more useful things at a Chapter level. David Newell will be advising on when the members individual details may be updated by them on the web and Mark White will be advising you all shortly about membership assistance etc.

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Minutes of:
# AUUG Exec Meeting

Date:            7/9/99
Time:            10:00 AM to 4.00 PM
Location:        Carlton Crest Hotel
                 Melbourne

Attendees:

Luigi Cantoni            Lca
Malcolm Caldwell         MC
Elizabeth Carroll        EC
David Newall             DN
David Purdue             DP
Michael Paddon           MP
Mark White               MW
Stephen Boucher          SB

## 1. Apologies

Lucy Chubb               LC
Gunther Feuereisen       GF
Peter Gray               PG

## 2. Presidents Report

Focused on conference since last meeting - have a good program. Thanks to MW for getting E. Raymond and Maddog here, and having to cope with losing a couple of keynotes. Proceedings a little thinner than usual, partly due to the way they have been printed, not as many in Powerpoint, many in html format.

MP and DP discussed a student kit, something for universities.

Idea:

$1,000 John Lions Award
$500 Student Paper Prize

Can you afford not to check us ?
http://www.auug.org.au

all on a poster.

Need student involvement in meetings. Possibly a recruitment day – benefit to corps. Contact final year students, ie in Melbourne, turn up at X venue, have a bunch of speakers from various organisations, to discuss careers in computing, AUUG rep to talk about memberships, with a sign up desk, and have the opportunity for corps and students to get in touch.

MP and DP to talk to dept heads. ACTION MP & DP

Basically they will talk to the larger ones this year - remainder of the smaller ones to receive a letter.

Motion to Accept:

Accepted: Lca/MC

## 3. Secretary's Report

Held over.

## 4. Treasurer's Report

Will discuss conference figures later. Put forward ideas of how to handle chapter finances - ideas accepted.

Lca was unable to catch up with SB on his trip to Melbourne, but has spoken to various banks since then, eg regarding credit cards, basically it appears the way we are handling these is still the best way to continue, therefore he will not change. Will close the Westpac account, and keep the Commonwealth Bank open.

Motion to Accept:

Accepted: DP/MW

## 5. Business Manager's Report

Focus has mainly been on the conference and organisation relating to it.

AUUGN has just come out, and started hitting desks end of last week.

Memberships are being processed, membership cards yet to be done.

Currently moving office, a week after the

conference. Look at phone lines - 3 phone lines for phone, fax and email. Lca and DP to source a fax under $1,500.

Majority of other topics to be covered during course of meeting.

Motion to Accept:

Accepted: DN/MW

## 6. Minutes of Previous Meeting

Accepted: MC/MW

Action Items:

DN has covered all his action items.

Other:

All items relating to the conference were covered, various others in other areas were not addressed, to be covered asap.

Still need a list of member benefits.

## 7. Events

Symposium Final figures - made a small profit.

Proposed Java seminar - will talk to Jan Newmarch about this - would like to run this in March - look at 3 cities, being - his choice of city, but to include Sydney or Melbourne - break even being 10.

Next event is the Security Symposium - venue booked for Tuesday 23 November, at the Wesley Centre. Deposit is required. DP to email auuganounce. Low cost event - looking at 25 registrations to break even, with a cost of $70. Students to cover variable costs. MC will ensure it happens with Alan Cowie.

Adverstise in Friday's AUUG Daily.

Open Source Symposium - hold in May. DN to organise venue. Hoping for attendance of 30. Budget still to be worked out. (e.g. $70 each, students to cover variable costs.)

## 8. Constitutional Changes

Next meeting as material has not been received. Lca will put forward that we change financial year to June 30. DP will talk with Chris Maltby.

## 9. AUUG'99

Sponsorship received from Dynmanics, TRL and Compaq. We did not receive sponsorship from Sun, or BMC although BMC are interested - will try for next year. SCO are interested.

Speakers and Program has all come together okay - session chairs allocated.

PR - reaching all the right people, govt depts, ISPs. Not getting on the radar, eg the Age. Not quite sure why this is happening.

Find a PR person in the IT press, eg Michael Henderson, Gotley Nix Evans Pty Ltd, 9299-6011. Interest from Systems, Computerworld, the Age and Radio Station.

Network, provided by ABA.

Budget, revenue down from numbers down on conference, higher on tutorials due to Adrian Cockcroft's tutorial - other numbers as predicted. Expenditure is much lower than predicted, final figures are not in, but we have approx $35,000 profit.

Question to be raised, did you come to the conference due to tutorials or vice versa?

Should market better to the chapters - offer prizes etc.

## 10. AUUG 2000

Announce AUUG 2000 in the AUUG Daily.

Moved MC/MW To be called AUUG 2K. Call for Papers to go out on Friday, 24-28 July at GCI on the Gold Coast. Motion to change the theme, moved MW/Lca, Enterprise Security is now the new theme.

Possible conf chairs and program chairs, David Hughes, Gary Gaskell, Paul Ashley, last two could possibly be joint program chairs as they work together. MW to target this week - ACTION. David Hughes has been targeted as conference chair - MW to follow up.

## 11. PR & Press

More info needs to be submitted to the press. Regular articles etc.

## 12. Tasks and Responsibilities

Tasks and Responsibilities need to be allocated:

| | |
|---|---|
| GF | AUUGN |
| LC | Lions Award |
| MP | Student Programs |
| PG | Member Champion |
| DN | Web Master |
| * | Assistant Treasurer |
| MC | Event Co-Ordinator |
| | LUG Liaison |

* Ask Lucy Chubb

DN to put the proceedings on the website in html.

### 13. AUUGN

Next issue has input from conference - should have enough content.

2 interviews to be set up - Theo de Raadt and Adrian Cockcroft to be interviewed.

### 14. IDG News Service

This is now working. Expect to see it on auugannounce.

### 15. SA Chapter

Greg Lehey received email addresses for SA. DN to talk to Greg Lehey.

### 16. Other Business

Chapters suggested - meeting notes etc, mailed out by EC – chapters contact EC and let her know the format they should be sent in.

Looking at database on the web - that can be downloaded by EC.

MW to look at arranging for sponsored machine, eg 9 gig. Possibly an Intel or Alpha. MW to resolve by end of September.

Tag Line - Unix and Open Systems Users to be discussed at the AGM.

Next Meeting:

> NEXT MEETING:
> 9 and 10 October 1999
> Hatbour View Hotel (ex-Centra)
> North Sydney

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## Minutes of:
# AUUG Exec Meeting

| Date: | 9-10/10/99 |
|---|---|
| Location: | Harbour View Hotel |
| | North Sydney |

Attendees:

| | |
|---|---|
| Luigi Cantoni | Lca |
| Malcolm Caldwell | MC |
| Elizabeth Carroll | EC |
| Gunther Feuereisen | GF |
| David Newall | DN |
| David Purdue | DP |
| Michael Paddon | MP |
| Mark White | MW |

**Apologies**

| | |
|---|---|
| Stephen Boucher | SB |
| Lucy Chubb | LC |
| Peter Gray | PG |

*Saturday 9 October*

**Points to cover this weekend**

1)      Strategy
2)      Tasks and deadlines

Saturday - go through the document supplied by Mark.

Sunday - action items

**Chapters**

1) 15-20 at chapter BOF - really a gripe session. Wanted to document the comments and come up with a reasonable course of action that AUUG and chapters can do, and get back on track.

2) Chapter people appear to be the same as those back 5 years ago or so, not getting new people, therefore they are out of ideas, same people talking at meetings. Not seeing the new blood coming in - eg Qld have had 2 new people join the Exec which has been really good, but need to have this happen more.

3) New members bring in new talks, more people then want to join, come along, volunteer and help.

4) Exec needs to kick things off and get things moving.

5) Lack of quality speakers is hurting chapter events. What is quality? They are sick of hearing each other talk. Not everyone wants to listen what the committee may believe is interesting.

6) Most people are at the top now, maybe we need to look lower down the tree, as there could be a lot of topics available which would generate interest.

7) MP concludes that the chapters may have been set up incorrectly. Originally it was geographically - Internet has made this less important. Special Interest Groups may be more viable, ie New Unix Users, material is then tailored for these people.

8) What does AUUG get out of having chapters? A way of providing a service to members, people who do not go to the conference, a way of networking, meeting people, sharing information of their experiences.

9) How can we change it so that people are interested in joining local chapters? SA example - when the early chapters were formed, it was a natural transgression, as people were interested. It was hard to interact with your peers once a year

at a conference - now through mailing lists etc people interact.

10) Possibly let the chapters die, have SIG's, with a symposium each year. This may be relevant Sydney / Melbourne. However, this may not be applicable to other areas eg Qld and NT.

11) We need to be able to say in about 10 seconds the main benefits of joining AUUG.

12) Membership can grow due to other factors eg Web, but later down the track this trails off, and you can lose sight of what AUUG is, and what is important to core members, which you can later lose.

## AUSCOM

1) Looking at Exhibitors for the conference - believes there is the interest in the marketplace, can come up with a deal for exhibitors/sponsorships.

2) Suggested we could achieve ie 12, MP however from a potential point of view, would rather just associate his brand with the event, due to cost of exhibiting.

3) Branding however, does not generate leads however, they would rather receive business cards, so the exhibitor has something to work with.

4) Run things as demos at the talks or in relation to a topic discussed?

5) AUUGN - should we have it mailed out with Systems Magazine.

6) Should AUUGN go to the shows that AUSCOM are attending - send out a batch with membership forms.

7) Do we look at sending out a copy of AUUGN each year with all the Systems Magazine?

8) Want up to date issues - ie not stuff already heard and not off the net.

9) Need to talk to Richard Chirgwin to decide what is best to include - ACTION DP

10) Sales on newstand is minimal (2,000 max)

11) When a show is on the max run is 15,000

12) ATUG, IDUG receive the publication

13) AUSCOM can do posters, ads etc for AUUG

14) Sponsorship pack deal needs to be explored as they have the same contacts, and have already built up a relationship with many organisations.

15) Envisage- AUUG sets up venue etc, AUSCOM can look at sponsorship - then we look at a % split.

16) AUSCOM are willing to put an ad into Systems Magazine for each issue free of charge.

17) Web sites need to be linked for AUSCOM and AUUG.

18) Updated member list to be sent to AUSCOM - ACTION LC

**Back to Meeting ..**

1) Member benefits need to be defined.

2) Recruitment agencies - do we have jobs advertised through the web-site? links to recruitment agencies? Idea would be for access for AUUG members only?

**Chapters Continued**

1) Through web-site register of speakers so they can be accessed by the chapters.

2) Strategy - Business Plan - Action Plans

3) Need to come up with a pack for the chapters.

4) Peoples ideas as to what is a benefit of AUUG is relevant to them. We however need to come up with a list as to what we believe would be the benefits.

**Phil McCrea's Comments**

1) Came on board when there were some big conferences eg Web, 1st year it worked, but with a couple of negative comments, 2nd year it didn't work, however it did nothing to increase the conference. Consequently it lost a lot of the exhibition.

2) AUUG seems to have lost its charisma - members have aged, roots in the past eg 80's.

3) Magazine always holds an interest.

4) If existing trends continue, AUUG will continue to lose members, estimate by about100 per year.

5) Need to embrace a couple of areas of interest, eg Linux, IP-based networks.

6) Maybe look at the Usenix format - eg focus on advanced computing systems.

7) Internet commerce is the big area of interest everywhere - may be too wide of the mark as far as AUUDG is concerned, but aspects should be of interest - security, networking, browser-based applications, etc.

8) There is HUGE interest in the marketplace in e-commerce.

9) If the way we are heading is advanced

computing, we should look at distributed environments, eg security, middleware, transactions, etc.

10) Network engineers were sure ATM was the way to go, those from an IT background knew all along it would be IP!

11) MW suggest "Advanced Computing Infrastructure"

12) Sugggestions:
- Integrators
- Implementors
- Visionaries

The People?
- Users
- Builders

## Greg Rose

1) Clear that Usenix wanted to do good things with their money, eg UUnet - benefited everyone.

2) Period in their growth when they almost went under. Industry grew, the conferences got bigger and bigger, planning further in advance, then a downturn. Effect was that a more prudent plan, more smaller events, was put in place. Lessons from Usenix, - best benefit for AUUG is AUUG members - this is correct. As applied to Usenix, we move information from where it is to where it isn't. This is a very applicable saying. Trying to turn it into a mission statement at Usenix. We do not need to look at things that we can get elsewhere, like credit cards or keyrings.

3) Usenix had been elitist, certainly less now, however this is the perception of AUUG. Shown that eg it is a conference or symposium, perception, not applicable to the real world. At Usenix, invited talks track was run in parallel with the conference. People would see the "regular" column, alongside the high-faluting column track.

4) Focus on practicality along with the conference is vital, we are currently doing this with the invited speakers. Tutorials were well received.

5) When LISA was run with Usenix, their attendance doubled in two years, resulting in lower numbers at the other main conferences, these were deemed too high level and general. Expressed in Australia as fragmentation - SAGE-AU, ISOC-AU.

6) When you give people a more specialised forum which is cheaper, it can fragment the attendees at a larger more general event – especially if the specialised one is smaller and cheaper, people will go to that instead.

7) Reason for joining Usenix apart from the conferences, is Login which is a good value publication. We are in the same situation, we have AUUGN as a tool.

8) Another reason for joining Usenix is SAGE. It hurt AUUG for them to be independent, however there is a large overlap of membership, including similar people on the boards.

9) Conference attendees at Usenix have shifted amongst the events, but number has stayed stable, but tutorial attendees have gone way up.

10) Suggestion - do we look at doubling the tutorials at the conference?

11) Basically putting up rego costs for events did not hurt Usenix.

12) Ideas, more tutorials - run the tutorial more than once at the same event. Do we include Saturdays - cheap flights - you get an extra day, for the price of your airfare.

13) Usenix can help to get people out - if we have the logistics in place. Suggest we ask Dan Klein who to get out for tutorials - he's their co-ordinator. Who are the top people and the hot topics?

14) Need to involve the chapters to identify the relevant people to have present.

*Sunday 10 October*

## Action Items

Member Benefit List
    Liz (and all)                  10/11/99

Open Source Subscription Service
    MWP & MW             10/11/99

Job Notification Service
    MW                    24/10/99

Document Accounting Procedure
    Lca                   10/11/99

Document Business Manager Job
    LC & DP               10/11/99

Fix Member DBase Processing - procedures – tools
    LC & GF               10/11/99

Marketing Program & Recruitment Drive
    MW                  15/12/99

AUUGN
- Linux Column
- BSD Column
- Login
    GF                     24/10/99

Talk to Ellie (Usenix) re: affiliation & Dan Klein re potential tutorials
    DP

Contact other potential Unix like groups
    GF & MW               10/11/99

Press Releases

MW & DP                          10/11/99

Negotiate deal with Systems
          MW & DP                15/12/99

AUUGN Cover colour and designs
          GF                     10/11/99

Electronic Services Strategy
          DP & MW                10/11/99

Educational Kit (include slides etc)
          MW                     10/11/99

Speaker Register
look at:
slashdot.org
          LC                     10/11/99

Form BSD SIG
          MWP                    10/11/99

Organise AUUG2K
-    CFP:LC                      28/10/99

-    Chase Committees
          Prog: MW
          Conf: LC
          Tut: DP
          Venue: LC              15/10/99

AUUGN - complimentary to Systems - benefit to members. Ideas for content are the hardest.

GF to ask for articles from Login, as well can we use SMH articles?

Need to have regular sections, eg Linux, Networking. GF to talk to Greg Lehey - for the OpenBSD section.

LC to provide MP with the AUUG logo.

Want a series of structured presentations of everyone's plans on the above for the next meeting.

**Events**

*Security Day*

Try for Michael Paddon - Building Firewalls with OpenBSD, Robi Karp (via Gunther).

Need speakers, topics etc for publicity

MWP to talk to Sydney marketing people to get a sponsorship - $500

email Linux, SAGE, AUUG - email lists to come to me from MWP

LC to do a budget.

Mail list:
linuxsa@linuxsa.org.au need to get in touch with linuxsa-request@linuxsa.org.au to register.

Name: AUUG Security Symposium

*AOSS*

-Organise AOSSII (May 2000)

*AUUG 2K*

Gary Gaskell and David Hughes wanted to be conf and program chairs respectively, based on it being in QLD.

Start informing in AUUGN, that we are looking at bids for 2001 - this will be chosen at the AUUG 2000 conference.

MWP moves that the AUUG2000 conference moves to Canberra.

Carried MC/DN

Sunday 2nd July - Friday 7th July

3 days of tutorials, 3 days of conference

Check accommodation in Canberra.

Conference Chair: speak to Peter Wishart

Program Chair: ask Gary Gaskell, committee - Andrew McRae,

Tutorial Chair: Lucy? Tridgell?

MW to look where to advertise the Call for Papers.

Deadlines:        final papers due 31 May

                  notify paper acceptance 30 April
                  program finalised

                  abstracts in by 3 March

LC to prepare the CFP by 28/10/99

**Summary of points from weekend meeting**

*AUUG Now*
          *AUUG Future*

Unix lost its charisma?
          Move Information/Knowledge

Unix is passe?
          Embrace all Unix (Linux, BSD, Unix)

Too Business-Oriented?
          Passionate about technology

Too "Commercial"?
          TCP/IP IPv6

Too Technical?
          Networks and Security Applications

Not Technical Enough?

What's coming next! (IT Futurists)

UNIX associated with Linux?
        COMMUNITY!

Open Source?
        AUUG?

"Builders of Advanced Computing Infrastructure"Focussed Symposia
        Embrace
        PEOPLE!

**Other ideas**

Advanced Technology - Real People
Cool Technology

Technology + People = Community
Action Item for MW to present the above tag line

Lca to provide LC with Dept Heads at all Australian Universities.

Email Greg and Phil to say thank you for their input. Action LC

Good to have Michael Spiro from AUSCOM - what we are doing is mutually beneficial.

DP to speak to Richard Chirgwin re feedback from articles that we submit - ACTION DP

Have a Unix diary for members - anything that may be of interest to our members (via Web and AUUGN).

Next meeting : Sunday 21st November – Sydney

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# AUUG2K

## THEME "ENTERPRISE SECURITY; ENTERPRISE LINUX"

## It's only 9 months away!

AUUG2K will be held in Canberra from
the 5th to 7th of July, 2000.

Put the date in your diary now and start
thinking of possible topics for papers.

The call for papers can be found
in this issue of AUUGN.

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# From the pages of
# unigram·x

## TURBOLINUX STRIKES CLUSTER DEALS WITH COMPAQ, GIGANET, CUBIX

Open source operating system Linux has long been labeled unscaleable, especially in comparison with rival (and commercial) flavors of Unix. That label won't stick much longer. Since changing its name from Pacific HiTech, TurboLinux Inc has thrown itself into efforts to promote its TurboCluster Server as a low- cost platform for compute-intensive applications. Three new alliances should help cement TurboCluster's position as the commercial cluster software option for Linux.

A deal with Compaq Computer Corp lets independent software vendors (ISVs) test drive their applications on TurboCluster software, Compaq Proliant servers and Compaq AlphaServer systems at Compaq's test labs in Marlboro, Massachusetts. The Test Drive Lab is available over the internet, so ISVs anywhere can try the systems on for size. TurboLinux has agreed to train Compaq's Test Drive Lab engineers and to provide software support. Both companies will market the program and TurboLinux will provide software to Compaq's Solution Alliance members at a discount.

That's only the beginning. Assuming high-end applications are developed and tested at the Compaq labs, companies will need systems to run them on. To that end, Giganet Inc has agreed to let TurboLinux package its cLAN drivers with the TurboCluster Server. The point is that the cLAN family supports virtual interface (VI) in hardware; this is an industry standard for compute-intensive Linux applications like financial and scientific modeling. VI provides such applications with a direct communications path, bypassing the operating system and eliminating processor overhead. The idea is to provide Linux clusters with high throughput, low latency and altogether unprecedented performance and efficiency. Businesses should be able to assemble Intel-based servers into server farms - an ideal low cost platform for web hosting, scientific and technical applications, TurboLinux executives say.

Any Intel-based servers in particular? Glad you asked: TurboLinux has also lined up Cubix Corp, a privately held hardware company, to bundle TurboCluster with its own Density Series servers for enterprise server farms. Cubix specializes in the manufacture of consolidated network server systems, so the TurboCluster bundle qualifies as a web farm appliance. TurboLinux and Cubix say they will work together on support, co-marketing and sales and will exchange technical information so as to tweak TurboCluster for the Cubix hardware. "We designed a redundantly redundant system for continuous web site uptime at a starting price under $10K," explained Cubix's VP of marketing and sales, Jim Zakzeski. "With TurboCluster server, Cubix turned a complex configuration into a commodity - inexpensive and easy to deploy." Linux not scalable? Not for long.

✧ ✧ ✧

## FRENCH GOVERNMENT TO MANDATE OPEN SOURCE
*By Kevin Murphy*

France is set to make open source software compulsory in all public IT projects, if a new private member's bill dealing with electronic tenders is passed this year. Two French senators are proposing that "the use by the public services and private organizations managing the public services of open source software ...will be from now on obligatory."

The move follows similar noises made by the European Commission earlier this month, when information society commissioner Erkki Liikanen said the European Union should favor open source operating systems in public IT tenders in order to improve the security of the desktop. This was seen by many as a deliberate snub to Microsoft Corp, the latest of many Brussels-Redmond run-ins. If passed, the French bill, while also studiously avoiding mentioning companies or software by name, could exacerbate the situation.

The bill proper states that public bodies would only be able to use "software free of [intellectual property] rights and whose source code is available." The only get-out clause would be if vendors provided unspecified additional "services", which would be authorized by law.

The senators behind the bill, Pierre Laffitte and Rene Tregouet, say they have opened up the proposals to public discussion via a web forum: the first time a French bill has been debated in such a way.

✧ ✧ ✧

## SUN RELEASES EARLY ACCESS SOLARIS 8, TRUSTED SOLARIS 7

Sun Microsystems Inc is to give users early access to its next Unix operating system, Solaris 8, by offering an Early Access package for $20. The package, which includes the software, a free license, full documentation and other tools such as the StarOffice productivity software, is effectively the second beta of Solaris 8. It is released on November 27th, with the final version is due out in February,. At around the same time Microsoft Corp's rival Windows 2000 operating system, the successor to NT 4, is to be officially released.

Solaris 8 includes support for the next-generation internet protocol IPV6, which supports an infinite number of internet addresses. This will become more immediately important in Europe and Asia than in the US, because of the popularity of online cellphones and other handheld IP devices. IPV4

November 1999

can be made to run alongside IPV6, for an easier transition. It also includes a live upgrade feature, so that Solaris 8 can be installed on a separate partition on a server, enabling Solaris 2.6 or 7 system to be upgraded with only a few minutes downtime, and with the option of fallback to the previous version.

Other features include support for dynamic reconfiguration of SCSI devices, a policy-based dynamic reconfiguration manager, hot patching for adding kernel patches and workarounds without bringing down the system, role-based access management and e-commerce tools. Real-time performance has also been speeded up so that the system can be used to run applications such as manufacturing control systems.

Support for eight-way nodes within clusters will emerge after the initial February release, but Sun says the 64-bit Solaris already supports "limitless scalability." Sun itself currently supports Solaris on 64-way symmetrical multi-processing systems, and promises further hardware launches beyond that.

Sun says that something like 90% of existing Solaris applications are fully binary compatible with Solaris 8, and offers an application certification tool, AppCert, for testing purposes. It offers Oracle 8 as an example of a major application running on Solaris 8 that required no changes. Solaris 8 will be released as a series of six CDs, including the core software, installation, AppCert binary verification and language CDs. A minimum system will fit into a few hundred megabytes, while a complete system will need 1Gb.

Sun says feedback from users of the Early Access version will be welcome, but says it's confident of the stability of the system already, having run it through a "platinum" beta testing program of 300 stress-testing environments. The beta 2 version is "almost ready," but not labeled for general availability or supported as such. Users want access to the system for early testing, says Sun.

Separately, Sun announced the availability of Trusted Solaris 7, the follow-on to Trusted Solaris 2.5.1, bringing 64-bit capabilities and support for the Sparc and Intel architectures to Trusted Solaris, including the Sun Enterprise 10000 Server. Trusted Solaris is sold to commercial banking and finance companies, and for government applications. The new version maintains binary compatibility with the older 32-bit version, and adds support for Sun's PCI hardware architectures and new transmission mediums, such as ATM, FDDI, Token Ring and Gigabit Ethernet.

✧   ✧   ✧

## INTEL TO BUNDLE RED HAT WITH ISP SERVERS
Red Hat Inc's already cozy relationship with Intel Corp got even cozier last week, when the San Jose chip maker announced it would bundle Durham, North Carolina's branded Linux with all server platforms marketed through its ISP. Intel already ships Microsoft Windows NT with its ISP servers, but now customers now have the choice of whether to pay for their operating system, or join the growing ranks of the open source software fanciers.

Intel has long been a backer of Red Hat, being one of the company's original investors, but now, says Colin Tenwick, Red Hat's VP and general manager for Europe, the Middle-East and Africa, Intel is getting involved in "nitty-gritty marketing effort" that will bolster open source software credentials in the ISP space. The companies also already collaborate on Linux engineering projects, and Tenwick claims that the open source OS is starting to underpin "some of the world's biggest web sites" as joint-initiatives as red hat's and Intel's prove the concept of scalability.

✧   ✧   ✧

## RED HAT SUPPORT ORGANIZATION EXTENDED TO APACHE, SENDMAIL
*By Rachel Chalmers*
Red Hat Inc, the stock market's darling and its first Linux-related IPO, has expanded its services program to provide consulting and support for Apache Web Server, Sendmail and Postfix, as well as its own Linux distribution. Red Hat's worldwide services group will offer support for these applications immediately. The company promises that more open source applications will be supported in future. The initiative is aimed at Red Hat's enterprise accounts, including the Burlington Coat Factory Co, Compaq Computer Corp and IBM Corp. Red Hat executives say enterprises like these are using open source software for point-of-sale applications and in their web server farms. Since these systems are running on Red Hat Linux, and since Red Hat bundles Apache and Sendmail with its operating system, it made sense to offer single-source support.

Cynics might add that Red Hat needs to justify its new, huge market capitalization. But Teresa Spengler, business unit leader for sales, argues: "The idea's always been there. We just needed the organization to follow suit." She notes that one third of Red Hat's 220 or so employees are engineers. Twenty or so of those engineers are developers and the rest work in technical support. "As you get into the higher end, they do overlap, though," she says - the thorniest technical issues are handed up to the developers themselves. So the company certainly had the bandwidth to add Apache, Sendmail and Postfix support. Spengler says little training was required, as most of Red Hat's engineers were already familiar with other open source packages. Whether that will continue to be true as Red Hat's support services continue to expand, remains to be seen.

❖

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# AUUG Local Chapter Meetings 1999

| CITY | LOCATION | OTHER |
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| **BRISBANE** | Inn on the Park<br>507 Coronation Drive<br>Toowong | For further information, contact the QAUUG Executive Committee via email (qauug-exec@auug.org.au). The techno-logically deprived can contact Rick Stevenson on (07) 5578-8933.<br><br>To subscribe to the QAUUG announcements mailing list, please send an e-mail message to:<br><majordomo@auug.org.au> containing the message "subscribe qauug <e-mail address>" in the e-mail body. |
| **CANBERRA** | Australian National University | |
| **HOBART** | University of Tasmania | |
| **MELBOURNE** | Various. For updated information See:<br><br>http://www.vic.auug.org.au/auug vic/av_meetings.html | The meetings alternate between Technical presentations in the odd numbered months and purely social occasions in the even numbered months. Some attempt is made to fit other AUUG activities into the schedule with minimum disruption. |
| **PERTH** | The Victoria League<br>276 Onslow Road<br>Shenton Park | Meeting commences at 6.15pm |
| **SYDNEY** | The Wesley Centre<br>Pitt Street<br>Sydney 2000 | |

**Up-to-date information is available by calling AUUG on 1800 625 655.**

# Unix Traps and Tricks

Jerry Vochteloo
jerry@socs.uts.edu.au

Welcome again to Unix tricks and traps, this month we have some fun with cal, and look at the local network. Anyone that has anything to contribute to this column, please email your contribution to jerry@socs.uts.edu.au, or contact me if you have any ideas about what you would like to see in this column.

✧ ✧ ✧

## CAL FUN
David Newall
davidn@rebel.net.au

The calendar song, revision 2:
> "Thirty days hath September, April, June and November, except in 1752 when September had only 20 days."

```
$ cal 9 1752
    September 1752
 S  M Tu  W Th  F  S
          1  2 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
```

### Eds - From the Linux man pages:

The Gregorian Reformation is assumed to have occurred in 1752 on the 3rd of September. By this time, most countries had recognised the reformation (although a few did not recognise it until the early 1900's.) Ten days following that date were eliminated by the reformation, so the calendar for that month is a bit unusual.

*(Thanks to Matthew Tippett for pointing out this snippet – Ed.)*

❖

## MONITOR_SERVERS
Gunther Feuereisen
gunther@zip.com.au

This is a really simple script; it is used to check if hosts are "ping"-able on the network. There are lots of ways to do this, and a lot of sophisticated software in vendor land that will do this with pretty pictures too (e.g. HP OpenView etc.)

This particular one will only send email if something is found that doesn't respond to the "ping" command.

Some notes:

Instead of sending email, you could run this through an SMS, fax, pager, or other kind of alerting software to generate the kind of alert you want.

This was written under Solaris. In the Solaris version of ping, the ping command returns an exit code of 0 if the ping was successful and 1 otherwise.

On other platforms, you will have to add some flags to limit the ping to a single packet (a lot of implementations of "ping" are an ongoing ping).

Typically this will be something like:

ping -c 1 <hostname> (for Digital Unix and others)
ping <hostname> -n 1 (for HP-UX and others)

Just change the ping command in the if statement to use whatever form you need for your platform.

Note: Under HP-UX 11.00 this didn't work. If a ping to a host was unsuccessful, it still returned an exit status of 0!!!

Which is kind of useless; on Digital Unix which is the other platform I tried it on at the time, the above returned the correct exit status.

In my home directory, under ~/etc, I keep files which list all hosts I am interested in, one per line. I used the "#" symbol as a comment or to temporarily disable the checking of a particular host.

i.e.

```
host1
host2
host3
# host4 - this one will not be checked
host5
```

Filename is "hosts.vendor", or any variant. Keeping these files in my etc directory allows me to use them as a basis for other commands (e.g. I have a small script that telnets to every box, by vendor type).

Funnily enough, I did this one in perl; it kind of highlights my whole attitude to scripting: I write in whatever language pops in my head first, or what I feel like writing. The script for the telnetting, is as follows:

```perl
#!/usr/local/bin/perl

open (HOSTS,"/home/gunther/etc/hosts.compaq") ||
  die "Cannot find hosts file.\n";

while (<HOSTS>)
{
  chop;
  next if ($_ =~ /^#/);
  system("clear");
  print "Telnetting to $_ ..\n";
  system("telnet $_");
}
```

Anyway, here is the script; it's in Korn shell (this could have been any Bourne shell clone) and is fairly simple. This could be written in perl quite easily or C if you prefer doing things that way.

```ksh
#!/bin/ksh
#
# monitor_servers - a script to do a ping test to all supported
# servers, every hour; and email any problems found.

date=`date +"%a %b %e %Y, %T"`
status=0
tstatus=0
tstatus=0
tstatus=0
recipients="gunther"

trap '/bin/rm /tmp/monitor_servers.$$' 1 2 3 15

exec 1>/tmp/monitor_servers.$$ 2>&1

for t in "Compaq Hosts" "HP Hosts" "Sun Hosts"
do
  case "$t" in
  "Compaq Hosts")    hosts="$HOME/etc/hosts.compaq"
```

```
                           ;;
   "HP Hosts")        hosts="$HOME/etc/hosts.hp"
                           ;;
   "Sun Hosts")             hosts="$HOME/etc/hosts.sun"
                           ;;
   *)                  echo "No hosts file found!"
                       exit 1
                           ;;
   esac
   tstatus=0
   cat $hosts | while read h
   do
      case $h in
      \#*)        ;;
      *)          if ! (/usr/sbin/ping $h >/dev/null 2>&1)
                  then
                     tstatus=`expr $tstatus + 1`
                     if [ $tstatus -eq 1 ]
                     then
                        echo "*** $t status on: $date .."
                     fi
                     echo "\t$h is not responding"
                     status=`expr $status + 1`
                  fi
      esac
   done
   if [ $tstatus -gt 0 ]
   then
      echo
   fi
done

if [ $status -gt 0 ]
then
   mailx -s "$date - monitor_servers update" $recipients < \
                               /tmp/monitor_servers.$$
fi

rm /tmp/monitor_servers.$$
```

❖


## LOCAL MACHINE INFORMATION
Jerry Vochteloo
jerry@socs.uts.edu.au


I am always interested in what machines are attached to my local network, be they Suns, Macs, PCs or Ethernet aware printers.

For those of us on Ethernet, you can get a lot of information about what is attached to your local network from the MAC (Ethernet) address of the devices attached.

Do a ping 255.255.255.255, this should fill your arp cache with the Ethernet addresses of everything pingable or your network. arp -a will list the contents of this cache. You can now consult http://standards.ieee.org/regauth/oui/oui.txt to find out about who made the Ethernet card that is attached to the machines on your network.

eg if you have suns attached to your network you might get MAC addresses that start with 08:00:20.

I have a little script that does it for me (these are the common Ethernet classes that are attached to my local network.

```
arp -a | sed 's/0*8:0*0:20:..*:..*:..*/Sun microsystems/
s/0*0:60:2f:..*:..*:..*/Cisco/
s/0*0:e0:29:..*:..*:..*/STANDARD MICROSYSTEMS CORP/
s/0*0:0*0:f8:..*:..*:..*/DIGITAL EQUIPMENT CORPORATION/
```

November 1999

```
s/0*0:0*0:c0:..*:.*:.*/WESTERN DIGITAL CORPORATION/
s/0*0:0*5:0*2:..*:.*:.*/Apple/
s/0*0:0*0:1d:..*:.*:.*/CABLETRON SYSTEMS/
s/0*0:50:f0:..*:.*:.*/?????/
s/0*8:0*0:69:..*:.*:.*/SILICON GRAPHICS/
s/0*0:0*0:e8:..*:.*:.*/ACCTON TECHNOLOGY/
s/0*0:0*0:18:..*:.*:.*/WEBSTER COMPUTER CORPORATION/
s/0*0:90:27:..*:.*:.*/INTEL CORPORATION/
s/0*0:60:97:..*:.*:.*/3COM CORPORATION/
s/0*0:80:2d:..*:.*:.*/XYLOGICS INC/
s/0*0:0*0:a7:..*:.*:.*/NETWORK COMPUTING DEVICES/
s/0*0:50:e4:..*:.*:.*/Apple (later)/
s/0*0:60:b0:..*:.*:.*/HEWLETT-PACKARD/
s/0*0:0*0:0c:..*:.*:.*/CISCO SYSTEMS/
s/0*8:0*0:0*7:..*:.*:.*/APPLE COMPUTER (another)/'
```

❖

# Application for Institutional Membership

## Section A: MEMBER DETAILS

The primary contact holds the full member voting rights and two designated representatives will be given membership rates to AUUG activities including chapter activities. In addition to the primary and two representatives, additional representatives can be included at a rate of $84 each. **Please attach a separate sheet with details of all representatives to be included with your membership.**

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### Primary Contact

Surname_____     First Name _____

Title: _____     Position_____

Address _____

Suburb _____     State _____Postcode_____

Telephone: Business _____     Facsimile_____

Email_____     Local Chapter Preference_____

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

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

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Title: _____

Date: _____

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Title: _____    Position _____
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Suburb _____    State _____ Postcode _____
Telephone: Business _____    Private _____
Facsimile: _____    E-mail_____

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Please indicate whether you require Student or Individual Membership by ticking the appropriate box.

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## Section C: STUDENT MEMBER CERTIFICATION

For those applying for Student Membership, this section is required to be completed by a member of the academic staff.

I hereby certify that the applicant on this form is a full time student and that the following details are correct.

NAME OF STUDENT: _____
INSTITUTION: _____
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SIGNED:_____
NAME: _____
TITLE:_____
DATE: _____

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