

# AARNews



Conductor Anthony Pope leads the Monash Brass Ensemble via video link

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## CEO's Report

As we near the end of another very exciting year for AARNet it is worth recapping on some of the highlights since our last AARNews.

AARNet has implemented its first 10 Gbps link in Australia with the ANU. This connection is routed over our Layer 3 network and will support research requirements where speeds in excess of 1 Gbps are required. In addition, in November QCIF through the University of Queensland demonstrated a 10Gb link on their OptiPortal to Austin, Texas as part of Supercomputing 2008.

International capacity has also been increased with the implementation of 2 diverse path STM-16 circuits established to carry the bulk of AARNet's international commodity internet traffic. This is effectively a 33% capacity upgrade from 3.75 Gbps to 5 Gbps.

October saw a visit from Professor Larry Smarr who is the Director of the California Institute for Telecommunications and Information Technology. While Larry was in Australia he energised the sector with details of his leading edge projects such as the OptiPortal and he continued to emphasise the challenges and benefits of true end-to-end network performance.

In the Applications and Services arena, AARNet took its roadshows around the country during September with very strong attendance. These events provided good working sessions in the areas of video streaming and exploring the varieties of content capture solutions.

At the time of writing there is still much to achieve. By year end AARNet will have finalised its National Collaboration Network (NCN) providing the opportunity for researchers to collaborate across virtual private circuits for specific

projects. In addition, we will be deploying a pilot implementation for a Dynamic Circuit Networking (DCN) platform. This will allow researchers to activate network capacity on a "request" basis with real time application.

In conclusion, I am pleased to advise you that AARNet has finalised the next iteration of its strategic plan covering the period 2009 through to 2012. This plan sets out ambitious yet achievable targets for the next four years that will continue to demonstrate value for researchers and educators across the nation.

I would like to thank you all for your support throughout 2008 and I wish all of you a safe and healthy Christmas and New Year.

Chris Hancock  
*Chief Executive Officer*

## FOCUS ON...

### OptiPortal at MMI Visualisation Laboratory (Viz Lab)

Monash Micro Imaging (MMI), as a result of an ARC linkage grant between Monash scientists and Leica Microsystems, has established an OptiPortal in its Image Analysis & Visualisation Laboratory in the Science Technology Research and Innovation Precinct (STRIP) at Clayton. The OptiPortal, comprising a 46 megapixel tiled screen was established in collaboration with the Monash e-Research Centre (MeRC), and will allow researchers to visualise high resolution microscopy images at full resolution while also viewing the entire image. Professor Larry Smarr, a pioneer of the technology, was present at the recent opening demonstration of the display wall at Monash University on 8 October. Professor Smarr observes that these video walls, when coupled with high bandwidth connectivity, eliminate the tyranny of distance. The OptiPortal will allow Monash researchers to collaborate on image and structure based projects with colleagues on other campuses or overseas. The megapixel resolution wall displays support high resolution over large areas, and are thus also excellent teaching tools.

This wall is the first in Australia to be established in a microscopy environment and is capable of displaying 9600 x 4800 pixels.

References & Links:

<http://www.monash.edu.au/eresearch/capabilities/resinfra.html>

[http://wiki.optiputer.net/optiportal/index.php/OptiPortal\\_Deployments](http://wiki.optiputer.net/optiportal/index.php/OptiPortal_Deployments)

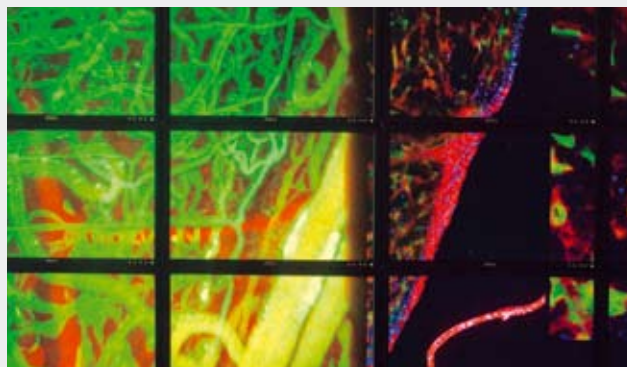


Opening of the MMI Viz Lab OptiPortal, 8 October 2008.

From L to R: Prof. Paul Bonnington (Director, MeRC), Dr Ian Harper (Director, MMI), Assoc. Prof. Martin Lackmann (Dept Biochemistry), Prof. David Abramson (Assoc. Director, MeRC) and Prof. Larry Smarr (UCSD). Prof. Smarr is the founding Director of the California Institute for Telecommunications and Information Technology and Harry E. Gruber Professor in the Jacobs School's Department of Computer Science and Engineering at UCSD. He is also Principal Investigator on the NSF OptiPuter LambdaGrid project, founding Director of the National Center for Supercomputing Applications (1985) and the National Computational Science Alliance (1997).



Live cell images displayed on the 20 panel OptiPortal at the MMI



## 10 Gbps Customer Connections

AARNet strives to provide the fastest available network connections to our customers to enable their research and teaching activities. We now offer 10 Gbps connections to the AARNet network. The first such service was installed in late October for the ANU's National Computational Infrastructure national facility.

The 10 Gbps connections have been trialed in the AARNet Canberra and Perth offices allowing

us to refine the way they connect to the network core, ensuring that all existing services are supported, and enabling some throughput testing. We achieved nearly 9 Gbps throughput between Canberra and Perth with a single TCP stream.

At this stage 10 Gbps customer connections are configured with an adjustable rate limit - pending the upgrade of inter-pop and inter-city connections beyond 10 Gbps. The rate limit is configured at 5 Gbps by default, but can be adjusted in consultation with the customer to meet specific needs.

The 10 Gbps customer connections have generated considerable interest since their announcement, and we expect more will be installed by mid 2009.



10G router

## SPOTLIGHT ON...

### Monash e-Research Centre

The Monash e-Research Centre (MeRC) was established in 2005 and its principal role is to build collaborations between research disciplines, nurture e-Research developments and to build bridges between researchers and service providers.

The aims of the Centre are to assist the research performance of the University through:

- improved use of ICT technologies;
- improved dialogue between IT developers in the Faculty of IT and end-user researchers in the other faculties;
- improved dialogue between ITS and researchers;
- nurturing development of e-Research and GRID technologies;
- engagement with industry and government; and
- engagement with national and international collaborations.

The MeRC provides advice, information and assistance to researchers to help them identify, specify, develop and configure IT tools and data management systems and practices to meet their specific needs. The MeRC can also assist



Professors Paul Bonnington, David Abramson and Edwina Cornish.

researchers develop research grant applications and build collaborations between groups and faculties, nationally and internationally.

Research data storage services include the Monash petabyte research data store (LaRDS), and a range of research data management services (the Library), and a digital archive (ARROW) containing published articles, working papers, conference proceedings, historic photographs and PhD theses.

High performance computing (HPC) services include the Monash Access Grid and external connectivity to the National Computing Infrastructure (NCI) and the Victorian Partnership for Advanced Computing (VPAC).

e-Research is the application and use of advanced ICT and data management

technologies to facilitate research and research collaboration within and between institutions locally and internationally. The MeRC is a leader in the development and application of e-Research.

The MeRC is also working to apply e-Research techniques and services to assist key research groups and to integrate e-Research capabilities into existing major research facilities as well as those being established in the Clayton precinct. These include:

- Australian Synchrotron
- Clinical imaging facility
- Monash electron microscope facility
- Monash optical microscope facility
- Wind tunnel.

Monash e-Research Centre  
<http://www.monash.edu.au/eresearch/>

### Visit to Australia by Professor Larry Smarr

During the two weeks from 2 to 17 October 2008, Professor Larry Smarr, Director of the California Institute for Telecommunications and Information Technology (Calit2) at the University of California, San Diego, undertook a most memorable visit to Australia's leading universities. He was accompanied by AARNet staff on each of his visits, culminating in an oration to 250 academic and government leaders in Canberra.

The visits were arranged and funded by the Australian American Leadership Dialogue (AALD), led by Phil Scanlan, who also accompanied Larry. AALD's goal is to encourage exchange between America and Australia, in this case sharing Larry's considerable experience and expertise in computing infrastructure, especially in optical circuits and OptIPortals.

Larry was the Principal Investigator in the recently concluded six-year NSF-funded OptIPuter Project, whose goal was to develop an environment

for supporting 21st century researchers with large datasets. Prior to moving to California to establish Calit2, he headed up the National Centre for Supercomputer Applications (NCSA) at the University of Illinois. For further background on Larry Smarr, credited with being one of the "founding fathers" of the Internet, see <http://www.jacobsschool.ucsd.edu/~lsmarr/>.

Larry visited the universities of Adelaide, WA, Monash, Swinburne, Melbourne, Queensland, UTS, UNSW, ANU, Sydney and the CSIRO. On each occasion, he delivered a keynote address as well as meeting with various key individuals in university and government. His presentation style was captivating, and the discussion most interesting. Powerpoints from each of his lectures can be found on his Website at <http://www.calit2.net/newsroom/presentations/lsmarr/index.php>.

His main thesis can be summarised as follows: Building an OptIPuter involves 5 steps: moving from the shared Internet to dedicated light paths; moving from user analysis on PCs to OptIPortals; moving from YouTube to uncompressed HD video

for collaboration; integration of OptIPortals, light paths, streaming video, creating "collaboratories"; and finally, the current bottleneck – connecting campuses end-to-end.

He concludes that a 21st century information infrastructure requires joining the global data-intensive collaboratory and should involve:

- all data-intensive Australian researchers, scientific instruments and data repositories;
- best of breed end-to-end connectivity - currently 10 Gbps; and
- a spirited partnership between Federal and State governments, universities, the CSIRO and AARNet to bring it about.



Larry Smarr speaking at the Leadership Dialogue Scholar Oration Dinner held in Canberra on 15 October

## AARNet Roadshows

AARNet organised five one day roadshows across Australia during September. Jason Bordujenko presented an update on telepresence and HD products citing a range of new products entering the market at competitive prices. Maggie Luczynska presented details of the recording service and Quality Assurance scheme. Brett Rosolen shared experiences of delivering live and recorded media solutions to key events and the newly established Streaming Media Project Group. Leon Li updated delegates on changes to VoIP services on 1 December, and further changes to Gatekeeper services taking place at a later date.

Other speakers included Jason Bell (ARCS, CQU) whose presentation on Successful Access Grids emphasised the importance of adherence to quality assurance standards. Professor Farzad Safaei described research to develop multi-site to multi-site video conferencing with spatial audio within a virtual environment. This work started recently with Smart Services CRC with AARNet as a lead partner. Graham Keys, QUT spoke about the Integrated Collaboration environments project. He summarised work with Gartner to define "collaboration" from a people and process viewpoint. Unified Communications was seen as an important platform despite integration challenges. Chris Willing, QCIF presented the OptiPuter, a computer with a very high resolution display distributing a visualisation solution across the world via an IP network. Dr Richard Caladine (UoW) explored the changes in personal communication video conferencing (PVCV) use and predicted that devices will increase and not go away. Richard advocated support for various devices under a unified communications concept and predicted that video communications traffic will grow unpredictably in volume and

will be more latency intolerant. Len Gould of Cement Australia explained how investments in video conferencing saved \$3m in travel costs and helped foster better communications via a combination of cultural and technological change with user education and support. Ashley Ward (ARCS) explained how the new Australian Research Collaboration Service (ARCS), with support from AARNet, will support the EVO desktop video collaboration tool.

### Observations

- There was greater adoption and use of video conferencing for events across campuses at a time when resources were limited.
- Unified Communications seemed sensible, however vendors' lock in concerns prevail. Many have selected unified communications to support staff members/students working from home.
- Many IT and Audio Visual departments are merging combining their qualities of IT for networking to deliver content and AV for dealing with room based audio and echo cancellation issues.
- Supporting lecturers to embrace the technology is a resource intensive challenge.
- Some content capture solutions support speech and text recognition, however massive systems are required as content creation "scales".

The 2009 roadshows will take place at Melbourne and Brisbane across 2 days ("hands-on" second day). The event would be fee based. Vendors will be encouraged to present their products and participate in interoperability tests and panel sessions. Special thanks to the five Universities that hosted this event and to keynote speakers. Keynote talks are available online at <http://www.aarnet.edu.au/blog/archive/2008/09.aspx>.

## BITS AND BYTES

### » IOCOM trial update

The trial on AARNet3 has ended. Future involvement by AARNet depends on a viable support model, and a more compelling licensing arrangement.

### » Changes in VoIP

The toll by-pass VoIP service will close on 1 December 2008. After that date, VoIP calls will only be routed between current members, whilst PSTN calls will be handled by each customer's own gateway and their commercial telecommunications provider. Changes to create a more manageable gatekeeper service are being developed and adequate notice will be given of any changes. For more details please contact Leon Li - [leon.li@arnet.edu.au](mailto:leon.li@arnet.edu.au).

- » The eduroam project group has enabled eduroam access across the majority of Australian universities as well as supporting key events such as QUESTnet, APAN26 and e-Research Australasia. A final report was published in October and is available online at [https://wiki.aarnet.edu.au/display/eduroam/eduroam\\_project\\_group\\_yr1\\_final\\_report](https://wiki.aarnet.edu.au/display/eduroam/eduroam_project_group_yr1_final_report). A new group will be formed in early 2009.



### » Streaming Media group update

The project group held its first meeting via video conference on 28 October. The first face-to-face meeting will be held on 28 November in Sydney. Members will have the opportunity to finalise the charter for submission, and to nominate and formally elect a chair at the meeting's conclusion. Institutions wishing to know more should contact Brett Rosolen - [brett.rosolen@aarnet.edu.au](mailto:brett.rosolen@aarnet.edu.au).



Brisbane Roadshow



Participants in the Brisbane Roadshow

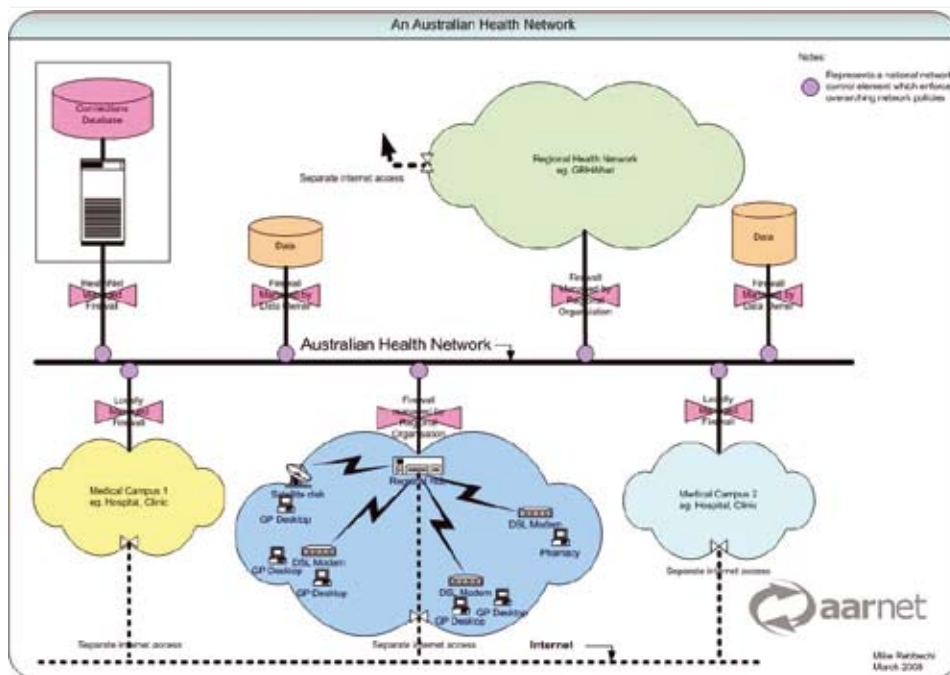
## AARNet and the National e-Health Strategy

AARNet recently joined others in making a submission to the Deloitte's consultancy developing the National e-Health Strategy. Amongst other things, the submission recommended that Australia's e-Health Strategy include:

- the immediate establishment of a secure, national, high capacity, broadband backbone capable of enabling the effective collaboration of all elements of the Australian health sector; and
- the establishment of the health sector national backbone as a collaboration with the Australian research and education sector through an independent and isolated overlay of Australia's existing national research and education network infrastructure.

The submission suggested that the implementation of a national health network should leverage off Australia's existing national R&E infrastructure, allow security control to remain in the hands of those people who currently oversee access in the health sector and ensure that its introduction not demand an immediate change to the "modus operandi" of the health sector.

Overlap between the R&E and Australian health campuses are surprisingly extensive with virtually all major teaching hospitals and health research campuses having access to the national R&E backbone. The concern remains that access to these connection points are limited to research, teaching and learning activities and are not being leveraged to service the needs of the broader health community. The extent of connectivity between health campuses and the R&E network infrastructure is currently the subject of a mapping exercise within the AARNet community.



## NVCS Quality Assurance (QA) Scheme

AARNet has recently launched a Quality Assurance scheme that allows automated call setup and tear down for conferences booked through the online (1-2-3) booking system. The Quality Assurance process enables a more proactive level of support from AARNet in working to make video conferencing more reliable and accessible to non-technical staff.

The aim of the scheme is to improve the user experience and promote greater confidence in video conferencing. Irrespective of the type of equipment being used, university audio visual coordinators (CAVEs) may submit their systems to testing and assess the critical factors involved in making automated conferencing services available and reliable.

Benefits for participating sites include:

- Registration of Quality Assured sites in the NVCS online booking system.
- Site listings that allow searching to locate conferencing facilities in other institutions.
- More efficient support from NVCS whereby existing known incompatibilities can be recognised instantly.
- Institutions that frequently collaborate may have open access to set up calls between each other automatically.
- The ability to have the MCU dial out to QA certified endpoints.

More information about the Quality Assurance Program can be found at [www.nvcs.edu.au](http://www.nvcs.edu.au).

## 2009 Charging Model

The 2009 charging model for subscription based customers will have the same three components as in 2008 – a Membership Fee, a Usage Option and a Fixed Option. However, the Fixed Option will be based on a port based service rather than on estimated traffic by volume.

The Membership Fee will be calculated in the same way as in 2008, but will include the cost

of some significant domestic peering arrangements which AARNet has negotiated during 2008. This will result in large commodity Internet savings to customers as downloads from these sources increase.

The price for the Usage Option will reduce to \$4 per GB, a 20% reduction on the 2008 rate of \$5 per GB. Excess traffic will also be charged at \$4 per GB.

The Fixed Option will be similar to the port based service which was introduced in 2008. However, it will only include Off-Net traffic, with On-Net traffic being provided as a separate unrestricted service. The Fixed Option will be available mid 2009 and a transition process from the Usage Option will be provided.

The 2009 charge for volume based customers will be \$8 per GB for all download traffic, a reduction of 20% on the 2008 charge of \$10 per GB.

## Conference Reports

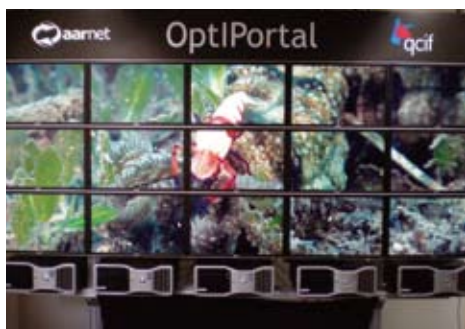
### APAN26

APAN26 took place in picturesque Queenstown, in New Zealand. The theme of the conference was Sustainable Networking. A number of talks delivered via video conference, with specific talks on tackling climate change. AARNet was a contributing sponsor, supporting eduroam wireless access, and with the support of QCIF, deploying the OptIPortal. Medical demonstrations were successful with hospitals in Sydney and Brisbane participating.

The opening plenary started with a traditional Maori welcome followed by a valuable overview of the TERENA EARNest report that stated that NRENs need to be focused on end-to-end performance, not just delivery to the campus; content and services were important, as was working directly with end-users to realise benefits of NRENs. Dr Ian Foster spoke about rethinking science's information technology foundations in terms of a service-oriented architecture to ensure a transformative effect on scientific communities.

The closing plenary included talks via high definition video from Bill St. Arnaud on the development of new architectures such as optical high speed research networks and distributed zero carbon cyber-infrastructure data centres to reduce CO2 emissions whilst benefitting e-Research. David Lassiner presented the newly adopted Internet2 Strategic Plan aimed at extending beyond the network layer to embrace end-to-end cyber infrastructure and the criticality of collaboration with researchers.

APAN26 conference slides are available at <http://www.apan.net/meetings/newzealand2008/schedule.html>.



The OptIPortal at APAN26

### GLIF 2008

The 8th annual Global Lambda Integrated Facility (GLIF) meeting was held in Seattle in October this year. The meeting was preceded by the Network Research Challenges Workshop (ONT-4).

The international NREN community was very well represented at the GLIF meeting. This is one of the few internationally focused NREN conferencing events including delegates from Europe, Asia, North and South America and Australasia.

All the presentations from the event are available at <http://www.glif.is/meetings/2008/>.

The conference allows AARNet to present its progress on domestic and international initiatives, such as the demonstrators for the CSIRO's ANTF and the University of Melbourne OptIPortal earlier this year.

AARNet took the opportunity to progress a number of its own activities such as integrating our pilot DCN implementation with Internet and the National Lambda Rail in Los Angeles as well as building linkages with CineGrid and GENI.

AARNet plans to continue its involvement in the GLIF community as the infrastructure and geographical reach provided through the facility is key to enabling international research and collaboration initiatives, especially those that are network heavy and require high capacity low latency connectivity.

### e-Research Australasia Conference

The second annual conference was held at the Sebel Hotel, Melbourne from 29 September to 1 October plus 2 days of Workshops. The conference brought together e-Research practitioners, developers and supporters, and is clearly set to become a fixture in the Researcher's calendar. It attracted about 400 delegates, mostly from Australia & New Zealand, with a few delegates and invited speakers from overseas.

Many delegates praised the conference particularly the fact that it brought together those involved in e-Research. The quality of the presentations was generally very high, and interesting. This was especially true of the plenaries, which focused mainly on high profile successful instances of e-Research. A wide range of disciplines were covered, including some from Arts & Humanities.

There was an exhibition associated with the conference, which included two AARNet stands -

one on eduroam and the other comprising AARNet's OptIPortal which was positioned prominently and was well received. QCIF again provided splendid support.

Sessions were not recorded, but powerpoint/acrobat files of most presentations are available on the conference website (<http://www.eresearch.edu.au/>). Next year's conference will be in Sydney, probably about the same time, though no announcement has been made yet.

### New Zealand's First Radio Telescope

On Wednesday 8 October New Zealand's first radio telescope was launched. The telescope, an initiative of the Auckland University of Technology (AUT), is located about 60 km north of Auckland at a radio quiet location valley near Warkworth.

The facility is seen as an important milestone as New Zealand is also campaigning for the SKA (Square Kilometre Array) to be located in Australia. Although it has as yet no direct connection to the AUT, this is expected to be completed around March 2009 enabling the radio telescope to be used collaboratively with other telescopes around the world in real time e-VLBI observations.

This is a significant event as it will be a catalyst in developing stronger collaborations between Australia and New Zealand. The existing link between AARNet and KAREN (Kiwi Advanced Research and Education Network) is provisioned at 155 Mbps.



Above:  
Sergei Gulyaev (left)  
and CEO of KAREN (Kiwi  
Advanced Research and  
Education Network)  
Donald Clark at the  
opening



Left:  
NZ's new radio  
telescope

## Schools

AARNet-K12 is a focused initiative that leverages AARNet's twenty year commitment and expertise in providing a world class network to the tertiary and research sectors and extending that opportunity to the schools sector.

AARNet has been consulting nationally with schools and schools sectors to understand the specific requirements of schools and is set to bring schools across Australia onto the AARNet network via 1 Gbps connections.

### Conferences

The AARNet team has been actively involved in schools conferences during 2008, sponsoring a number of key events.

- Society for the Provision of Education in Rural Australia (SPERA) conference in Melbourne.
- Expanding Learning Horizons and Schooltech conferences in Lorne.
- Digital Education Revolution in Action conference hosted at John Paul College in Brisbane and opened by Deputy Prime Minister Julia Gillard.

At the Brisbane conference AARNet built the OptIPortal and demonstrated its visualisation and collaboration capabilities for the first time in a schools context.

### National Science Week

AARNet facilitated eight collaboration projects that brought together classrooms of students in schools across Australia with scientists and researchers via High Definition Video Conferencing to support the curriculum related activities of the National Science Week theme: 'Planet Earth - Planet of Change'.

### Fibre Connections to Schools (FCS)

AARNet continues to make a significant contribution to the federal government's Fibre Connections to Schools (FCS) initiative. In the recent 'Strategies for Realising the National Vision of Connectivity for Australian Schools' ([http://www.digitaleducationrevolution.gov.au/broadband/implement\\_approach.htm](http://www.digitaleducationrevolution.gov.au/broadband/implement_approach.htm))

AARNet is identified as a key enabler in delivering on a sustainable national schools network.



Scots College Student engaging with Professor Peter Quinn (UWA) learning about the SKA

## Future Events

### APAN27

2-6 March 2009, Kaohsiung, Taiwan

### CAUDIT Meeting,

7 May 2009, Perth

### TERENA

8-11 June 2009, Malaga, Spain

### QUESTnet2009

7-10 July 2009, Royal Pines Resort, Queensland

## Contact Us

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We welcome your suggestions/feedback.

If your institution can demonstrate an interesting/innovative use of the network please contact [aarnews@arnet.edu.au](mailto:aarnews@arnet.edu.au)

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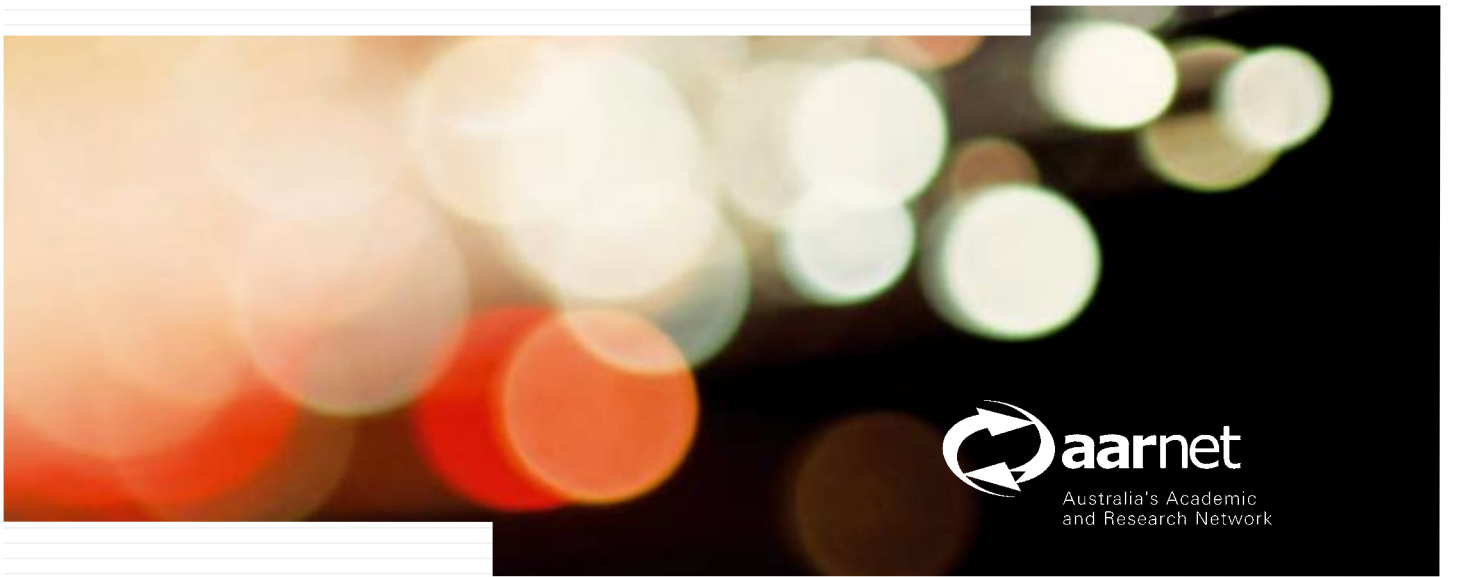
## Staff Profile - Tim Rayner

Tim began his working life as an Electronic Design Engineer with Alcatel in Sydney - working on ASICs for SDH equipment, and administering Sun unix workstations. More recently, Tim led Charles Sturt University's Networking team from the Albury campus in southern NSW. He enjoyed leading his team in the design and deployment of a new network in 2004 - and pioneering and enhancing the university's telephony and internet billing systems over the years. Using and administering the linux operating system and production trials of open source telephony systems were other highlights.

Tim joined AARNet's operations team in Canberra in 2007 - as the ACT Regional Network Manager. The challenge of coming up to speed to understand and support both the AARNet3 and optical networks has been rewarding. A highlight has been installing and testing the 10 Gbps customer connections.



Tim lives in Canberra's inner south with his wife Jane, and children Alys, Emma & Ben. He enjoys bike riding - even in the Canberra winter - with his family, for commuting to work, and occasionally for visiting customer and PoP sites. He also enjoys Friday afternoon social soccer with the guys from CSIRO, and listening to classical music - particularly when played by his wife and children on flute, violin, cello and piano.



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