



Australian Vice-Chancellors' Committee

(INCORPORATED IN THE A.C.T.)

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4 September 1991

AUSTRALIAN ACADEMIC AND RESEARCH NETWORK (AARNet)

Meeting No 3/91

The next meeting of the Australian Academic and Research Network (AARNet) will be held on Thursday 12 September 1991 in the Vice-Chancellor's Conference (Main Quadrangle), The University of Sydney commencing at 2:30 pm. The meeting is expected to complete its business by 5:15pm.

AGENDA

1. ATTENDANCE AND APOLOGIES

Professor Don McNicol (Chair)
Dr Robin Erskine
Mr Alan Coulter
Professor Peter Poole
Dr J G (Iain) Wallace
Mr Greg Batchelor
Dr John O'Callaghan
Professor Mary O'Kane

Secretariat

Mr John Mullarvey
Mr Geoff Huston
Mr Peter Elford

Apologies

Dr Norman Thompson

Membership of the AARNet Advisory Board.

The AVCC has appointed Dr Norman Thompson, the University Secretary, of the University of Western Sydney as an additional member of the AARNet Advisory Board.

2. MINUTES OF MEETING 2/91

... The minutes of the second meeting of the Board for 1991, held on 29 May 1991 are attached and require **confirmation**.

3. MATTERS ARISING FROM THE MINUTES (NOT RAISED ELSEWHERE IN THE AGENDA)

3.1 AARNet Booklet

Although activity has commenced in this area, no drafts of the material are ready for review at this stage. The project officer at the Queensland University of Technology has been contacted regarding the inclusion of directory information in the AARNet Guide Booklet being prepared.

All sites have been contacted regarding their entry in the AARNet Resource Guide, and this guide has been updated to reflect the current situation.

It is hoped that drafts of a combined user guide and resource guide booklet will be completed by the last quarter of this year, in time for Networkshop 91.

3.2 Case Studies of AARNet Use

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A summary of received case studies has been prepared and is attached. It is intended to circulate these case studies to Vice-Chancellors, DEET and other relevant bodies as background material relating to the uses and benefits of the AARNet program.

4. AVCC COMMITTEE STRUCTURE *31*

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The attached extract from the minutes of the AVCC Board meeting of 23 July 1991 indicates the forthcoming alterations in the AVCC Standing Committee structure.

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In particular it is noted that the Board of the AVCC has recommended to the AVCC that a Standing Committee on Information Resources should be established. Furthermore the AVCC Board agreed that the AARNet Advisory Board would become an advisory body to the new Standing Committee, although it is expected to operate fairly independently.

Mr Mullarvey and Professor McNicol will provide further details of these changes in the AVCC Committee Structure and the associated implications with respect to the operation of the AARNet Advisory Board.

It is **recommended** that the Board:

note the changes in the AVCC Committee Structure; and

note that the AARNet Advisory Board will report to the AVCC Standing Committee on Information Resources, once this committee is established.

5. AARNet STATUS REPORT

... The AARNet Second Quarter 1991 report is attached, for the information of Board members.

... A supplementary report of activities over the May-August period has been prepared by the Network Technical Manager, which elaborates on a number of major activities undertaken over this period. This report is attached.

... Also attached are a number of usage plots for AARNet indicating traffic levels recorded on the network. These graphs include total traffic levels over AARNet for the past 15 months, as well as 15 month graphs of traffic on a State-by-State breakdown and a snapshot of 15 minutes traffic

levels over all links for the week ending 25 August 1991. Also included are the application-based profiles of usage of the International link for 1991.

... Also attached is the summary report for the Affiliate Membership program. Receipts from the Affiliate Membership program for 1991 total some \$324,000 to date.

The AARNet Network Technical Manager, Mr Huston, will speak to these reports.

It is **recommended** that the Board:

note the AARNet Second Quarter Report;

note the Network Technical Manager's Report;

note the current usage levels; and

note the current status of the AARNet Affiliate Membership program.

6. INTERNATIONAL ACTIVITIES

... Attached papers provide background information regarding the current situation and anticipated developments across the global research network domain. The papers include a summary of the current status of the various national networks, a report of the recent PACCOM meeting, a report on the emerging commercial interest in the Internet, a report on the July meeting with IBM Pacific, and reports on the global engineering and planning efforts and regional and global policy coordination efforts.

AARNet is playing an active role in the international research networking domain within a number of active groups. This includes coordination of policy and funding of research network facilities at a regional and global level through the auspices of the Asia Pacific Coordinating Committee for International Research Networking (APCCIRN) and the Coordinating Committee for Intercontinental Research Networks (CCIRN), coordination of engineering and planning of network services through the Intercontinental Engineering and Planning Group (IEPG), and more regional engineering and planning activities under the auspices of the the Asia/Pacific Engineering and Planning Group (APEPG) and PACCOM.

Additionally AARNet is playing an active role within the UNESCO Regional Informatiks Program for South East Asia and the Pacific (RINSEAP), which is concentrating its efforts on the various requirements associated in extending the information networks to the developing nations within the region.

It is noted that the wider global research network is constructed from a collection of national elements, such as AARNet, working within both a regional framework and a global framework. The resultant matrix of networks becomes a cohesive functional entity only when each component network works within reasonable parameters of synchronization with their peers, both in terms of the networking technology and in terms of service, access and transit policies.

From the perspective of AARNet, the actions and plans of our peer networks will have an impact on AARNet's actions and plans, within such areas as deployed technologies, type of services and domestic community of connectivity.

It is intended to address this item by presentations by Dr Erskine and Mr Huston on the policy and engineering international activities within the various regional and global groups, as well as providing a perspective on the current status of peer academic and research networks.

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It is **recommended** that the Board:

note these international collaborative activities being undertaken by AARNet staff and AARNet Advisory Board members.

7. AARNet LINKS

As noted at previous meetings, AARNet staff are continually monitoring the usage levels of all backbone and tail links and as an ongoing commitment, will be proposing to the Board upgrades of the capacity of these links as and when required.

There are a number of links which are now running at peak capacity, or are estimated to be shortly running at peak capacity given current growth trends. The links which are being loaded to this extent are:

Link	Status	Recommendation
AARNet - USA (FIX-West)	currently 256K	upgrade to 512K in early 92
National - WA Hub	currently 48K	upgrade to 128K or 256K (using ISDN) in mid-1992
National - Tas Hub	currently 48K	upgrade to 128K or 256K (using ISDN) in late 92 / early 93
University of Newcastle	currently 48K	upgrade to 128K (using ISDN) early 92
Deakin University	currently 48K	upgrade to 128K (using ISDN) early 92

In addition the following links are currently running at peak saturation levels, but will be upgraded to higher capacities by the last quarter of this year in line with Board decisions to upgrade these links at meeting 2/91:

Link	Status
National - Qld Hub	currently 48K - to be upgraded to 2Mb by November 91)
National - SA Hub	currently 48K - to be upgraded to 2Mb by November 1991)
Monash University	currently 48K - to be upgraded to 2Mb by November 91)

In addition there are a number of other tail loop upgrades being contemplated within the Regional networks of AARNet:

In Western Australia a regional networking proposal is being considered to purchase the capital equipment required to support ISDN channel aggregation in each of the four institutions. The ISDN recurrent charges would be met by the institutions and AARNet, under details to be arranged.

In Queensland the State Government is providing funding to the University of Queensland to purchase Telecom 2Mbps links to the University College of Southern Queensland, The University College of Central Queensland and the James Cook University of North Queensland to replace the existing AARNet 48K links. It is understood that the funding proposal would also cover the recurrent costs of the links for an initial period of 12 months. Subsequently the major component of the link costs would be borne by the institutions.

It is also noted that the AARNet link to the AVCC has been implemented using ISDN Microlink. Following reliability tests on this configuration it is proposed that if the tests indicate the viability of this service, then detailed plans to migrate the existing metropolitan 48K DDS links to 64K ISDN links will be prepared in the last quarter of this year, and be presented to the Board at the final meeting in 1991 for consideration. In addition it is proposed to investigate the feasibility of

the provision of backup facilities on the backbone and international links using dynamic ISDN technology. A more detailed proposal on this subject will be prepared in the coming months.

In discussions with CSIRO the possibility of using a Sydney - Canberra - Melbourne CSIRO channel configuration for mutual backup with the AARNet facilities was raised. This will allow AARNet to cancel the existing 48K DDS backup circuit and provide both networks with reasonable backup capability on these circuits.

In terms of immediate activity, the initial talks with PACCOM regarding the financing of an upgrade to the international circuit should commence relatively shortly in order to complete the upgrade within a timeframe of under six months. This timeframe is to allow PACCOM to be in a position to respond to this call for increased bandwidth on the link and gather together the necessary funding for the US half circuit. It is noted that at this stage there is the possibility that AARNet may be called on to provide a contribution to the upgraded circuit's US half circuit costs in the event that National Science Foundation's funding to PACCOM for the Australian link (as a component of the NSF's contribution to the Australia - US Science Collaboration program) does not eventuate for whatever reason. It is anticipated that a response on this subject from PACCOM should be forthcoming in time for meeting 4/91 of the AARNet Advisory Board if the link upgrade process is initiated in the next week.

The remaining nominated upgrades are at this stage dependant on the results of the AARNet evaluation of the viability of using ISDN circuits, and approval to proceed is not requested from the Board at this stage.

It is **recommended** that the Board:

approve the implementation upgrade of the international link to 512K in early 1992.

8. STAFFING STRUCTURE FOR AARNET

... Following consideration of this subject by the AARNet Advisory Board in Meeting 2/91, a more detailed discussion paper has been prepared on this topic. This paper, together with an Internet Draft document describing the general services that are provided by a Network Information Service organisation, has been sent to the Chair of the AARNet Advisory Board for consideration. A copy of the staffing paper, and the Internet Draft document are attached.

It is noted that with the establishment of the new Standing Committee on Information Resources an additional Assistant Secretary was likely to be recruited by the AVCC Secretariat to take responsibility for servicing this new Standing Committee and the AARNet Advisory Board.

It is **recommended** that the Board:

advise the AVCC that the position of General Manager, AARNet, is no longer directly relevant to staffing requirements directly related to AARNet;

advise the AVCC that the position of Network Coordinator: Services, be created; and

advise the AVCC that a clerical support position for AARNet should be created.

9. AARNET PROJECTS

It is anticipated that the AARNet projects funded in 1990 should be substantially complete by November 1991. Accordingly it is proposed that the various project managers be contacted and requested to provide final reports and additional material by that date, together with a detailed

acquittal of the project funds. It is intended that this be completed in time for the next meeting of the AARNet Advisory Board.

The three projects approved by the Advisory Board in meeting 2/91 are now underway. An Affiliate Membership application from the Antarctic Division has been processed, and the link is being installed. CSIRO DMS are currently working on device drivers for the reference clock modem.

- ... The third project, the Archives Project, was considered to require further definition, and accordingly the proposers were requested to provide a more substantive description of the proposed activity. The initial project report from the Archive Working Group is attached for consideration by the Board. It is noted that some \$1,500 has been spent on preparing this report. The report proposes a level of funding of \$68,500, the majority of which (some \$50,000) is to be spent on the purchase of relevant equipment for the project.
- ... Dr Erskine, the chair of the Project Sub-Committee will report on the outcomes of consideration of the 1991 project submissions by the group. A copy of his final 1991 report to the Chair of the Board is attached.

It is noted that in meeting 2/91 the Board considered that for future years it would be beneficial for AARNet to state what projects it wishes to fund, and invite groups to bid to undertake the nominated projects. It is intended that a detailed specification of potential projects be drawn up by AARNet staff for the final 1991 meeting of the Advisory Board, for the Board's consideration.

It is **recommended** that the Board:

advise the AVCC to request that 1990 project managers submit final reports and detailed acquittal of funds by December 1991;

approve the funding for the Archives Project;

approve the recommendations for project funding, as detailed in the Project Sub-Committee's final report on the 1991 projects; and

request AARNet staff to prepare a detailed specification of potential projects for consideration by the AARNet Advisory Board at its next meeting.

10. AARNet FUNDING FOR PRIVATE CONNECTIONS

Three institutional sites are currently connected to AARNet using private or locally funded facilities. These sites are:

Griffith University	2Mbps Telecom Megalink (muxed capacity of 1Mbps)
RMIT	10Mbps microwave
UNSW	10Mbps microwave.

Within Queensland the Queensland University of Technology will be taking over the funding of a 2Mbps service which was funded through the Queensland State Government for the past twelve months. No communication has been received to date from the Queensland University of Technology regarding partial AARNet funding for this link for 1992.

At present AARNet provides funding support for the three listed links to the level that AARNet would have paid Telecom for a 48K DDS service to the site (some \$13,104 for 1991 for metropolitan connections), plus an additional contribution towards maintenance of equipment that was not required to be purchased by AARNet (some \$1,343 for 1991).

It is probable that over the next 15 months AARNet will undertake a migration of the leased DDS services to more cost effective technologies. The current trials of ISDN microlink with the AVCC Secretariat indicate the viability of using ISDN within such a configuration, and it is likely that the result of this evaluation will be a more widespread conversion to ISDN across AARNet in 1992.

Associated with this conversion to ISDN is the matter of determination of levels of funding support for private connections. It is proposed that, in line with the anticipated migration of AARNet link services to ISDN Microlink, that the telecommunications component of this funding be set at the equivalent costs of the lease of a 64K SPVC ISDN microlink connection as of 1992 (Within metropolitan areas this is a funding level of \$3,852 p.a.)

It is **recommended** that the Board:

approve the level of funding for private tail loop connections as that of the Telecom 64K SPVC ISDN Microlink service, commencing in 1992. ✓

11. AARNet BUDGET

11.1 Expenditure

- ... Attached is the 1991 AARNet budget schedule, reflecting actual expenditure to date and anticipated commitments to the end of the year. The budget projections have been updated for the triennium 1992-1994, with 1992 figures being based on actual current services pricings where known. It should be noted that the update for the 1992 - 1994 triennium has been revised to use 1992 dollars.

Mr Mullarvey will speak to the proposed 1992 AARNet Budget.

It is **recommended** that the Board:

endorse the proposed AARNet expenditure program for 1992 to the AVCC.

11.2 Funding

The budget sheet also provides details of proposed funding for 1992.

It is noted that the AVCC member contribution to AARNet is proposed to be increased by some 28.5% over the average of the 1990 and 1991 levels. In compound terms this represents a growth of some 13% p.a., or a real money growth of some 7% p.a.

The CSIRO contribution is proposed to be increased by a comparable amount to AVCC member institutions, with a base contribution of some \$255,333 for 1992, together with an additional \$35,000 as CSIRO's contribution to the Melbourne link upgrades (as outlined in the meeting notes for meeting 2/91 of the Board).

- ... A submission has been made to the Australian Research Council (ARC) for funding support under Mechanism C, for an amount of \$1,070,023. A copy of the submission is attached. Also attached is a copy of a letter from the Department of Employment, Education and Training to the AVCC regarding a proposed review of AARNet under the auspices of the Institutional Grants Committee of the Australian Research Council. Mr Mullarvey will elaborate on this matter to the Board, following further advice from DEET.

The AARNet Advisory Board is requested to consider these papers, and recommend this schedule to the AVCC and CSIRO as intended funding commitments for 1992, with the proviso that such commitments cannot be finalized until ARC funding levels for 1992 are known.

It is **recommended** that the Board:

endorse the proposed AARNet funding program for 1992 to the AVCC; and

advise the AVCC to endorse the funding of AARNet as the highest priority for the ARC Mechanism C funding program, and to so advise the ARC.



11.3 ASTEC SUBMISSION

... In response to a call for submissions by the Australian Science and Technology Council (ASTEC), an expression of interest has been submitted. A copy of this response is attached for the information of Board members. The submission highlights the medium term requirement for enhanced capabilities within AARNet, identifying the pending requirement for migration of the existing Kilo-bit and Mega-bit transmission capabilities within the AARNet infrastructure into one which uses multi-Mega- and even Giga-bit transmission technologies.

It is **recommended** that the Board:

note the submission to ASTEC.



12. AARNet ACCEPTABLE USE POLICY

The AVCC has received a number of comments concerning the AARNet Acceptable Use Policy regarding the clarity of intent of the policy. This document has been edited in accordance with suggestions received, and is now passed to the AARNet Advisory Board for consideration. The changes do not alter the intent of the Acceptable Use Policy, but are intended to clarify what is considered acceptable use. A copy of the AARNet Agreement with Member Institutions, which includes a statement of the current AARNet Acceptable Use Policy is attached.

It is **recommended** that the Board:

endorse the revised AARNet Acceptable Use Policy statement.



13. INTRUSION AND HACKING WITHIN AARNet

AARNet Staff have been contacted by a member of the Australian Federal Police's (AFP) Computer Crime Section regarding intrusion and hacking episodes which have been occurring within AARNet over the last few months. This correlates with reports received of similar activity by a number of sites, all of which to date can be classified as intrusion episodes rather than intrusion and subsequent willful damage.

It is noted that while a reasonable degree of the the initial intrusion activity is concentrated on access into AARNet through dial-up modems and hosts at RMIT, the actual breakins are occurring within hosts across Australia and worldwide. It is also noted that at this stage it is highly likely that it is the considered opinion of the AFP that even if access through RMIT was effectively curtailed, the intruders have sufficient skill and knowledge to gain access through other sites, and consequently the intrusion incidents would in all likelihood persist with access being gained through other sites.

It was suggested by the AFP that AVCC members and CSIRO may wish to cooperate with the AFP Computer Crime Section in logging intrusion episodes and passing this information to the AFP.

It is **recommended** that the Board:

consider the various aspects of policy raised by this request for cooperation; and

advise the AVCC as to the most appropriate role of the AVCC and member institutions with respect to the Australian Federal Police on this matter.

14. AARNet's INTERFACE TO THE PUBLIC PACKET SWITCHED NETWORKS

It is noted that the interface to the public packet switched networks is somewhat piecemeal and fragmentary across AARNet, with various interfaces being provided on a site-by-site basis in general.

Such an approach is not a viable longer term strategy, as there are many resources accessible only via the public packet switched networks that are of value to the academic and research client population of AARNet.

Many of these issues of interfacing to the public packet switched networks can be addressed by enumerating the various requirements from AARNet's perspective, and formatting these requirements within a Request for Proposals (RFP) for the operation of a gateway service. This would allow prospective operators to respond to this request in an environment which would hopefully optimize AARNet's position with respect to functionality and operational costs. It is noted that the RFP would cover X.29 pad access, modem access Australia-wide. X.25 access and potentially X.400 gateway access.

It is **recommended** that the Board:

approve the preparation of a Request for Proposals for the interconnection of AARNet to the public packet switched networks.

15. NETWORKSHOP 91

Networkshop'91 will be held on 2 - 4 December 1991 in Hobart, hosted by the University of Tasmania.

As detailed in the 1991 budget, AARNet has allocated the sum of \$12,000 to fund up to two international experts to attend the Networkshop. It is proposed that Marshall Rose be invited to attend, and also to present tutorials on OSI in the days following the workshop.

The AARNet Directory Services Project group has also been approached regarding the nomination of a suitable expert on directory services technologies.

The University of Tasmania are in the process of preparing the material for the announcement of the Networkshop, and material will be forwarded to Board members as soon as it is available.

16. DATE OF NEXT MEETING

Due to prior commitments from AVCC staff the November meeting, originally scheduled for 22 November, is to be rescheduled.

It is proposed to meet in conjunction with Networkshop'91 at Hobart, on 2 December 1991.

17. OTHER BUSINESS