



Australian Vice-Chancellors' Committee

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AARNet Advisory Board Papers

Network Technical Manager's Report May-August 1991

This report is a followup document to the AARNet Second Quarter 1991 Report, covering a number of items not explicitly mentioned in the report, as well as providing further information on major areas of activity.

1. Usage levels

Attached to this report are usage graphs indicating traffic levels within AARNet up to the start of September 1991. The total usage graph shows continued rates of growth and confirm the existing high growth trend of usage.

An analysis of the Australian domain namespace indicates that there are now some 22,000 Australian hosts connected to AARNet (which on a per capita basis is second only to the US, by a very small margin). In terms of international traffic logged to and from the US NSFNET, AARNet is one of the major international traffic points, again indicating the high degree of uptake of services across the user sector within AARNet.

These figures indicate that AARNet will need to continue the current program of installation of additional bearer capacity within the domestic and international network infrastructure through 1992 to meet these user requirement for services.

2. Reliability

Overall reliability of AARNet has been good until August. In the May - July period there were no noted equipment failures and only minor outages in some tail loops due to carrier problems, all of which have been rectified promptly by Telecom and OTC staff. Link availability was high, with most of the end-system configuration issues adequately addressed across the entire network.

However the same cannot be said of August 1991. Due to industrial action by OTC employees at the start of the month, the international circuit was down from 7 August until 9 August. During this period the lack of root network name information (which is normally supplied over the international link) also implied that there were problems within a number of sites and links within Australia even though the domestic bearers were functioning normally. Measures are underway to correct this name configuration problem, and it is anticipated that future international link outages will not have the same impact on domestic traffic.

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Within the National Hub in Melbourne a set of faulty Ethernet interface equipment caused congestion problems in traffic passing across the national hub. This problem was noted on the 25th August and the first set of faulty equipment located and replaced on the 28th August (due to the nature of the problem diagnosis was not a straightforward task). Further Ethernet problems have been identified at time of writing, which are anticipated to be rectified shortly.

On the evening of the 27th August the 2Mb link Canberra - Sydney started logging framing errors at a rate which was causing traffic disturbance. The link was switched out on the 28th August (NSW traffic was switched onto the 48K backup link, which although heavily used, allowed connectivity to be continued throughout the period of primary link outage) and Telecom and AARNet commenced diagnosis of the problem. The circuit was restored on the 29th August, but it is noted that fault isolation was incomplete, and while faulty modems were suspected, no actual AARNet or Telecom has been replaced in the restored circuit. At time of writing of this report (1 September) the problems with this link are not fully resolved.

AARNet staff are continuing to examine the feasibility of using ISDN as a dynamic backup facility of the leased links within the network as the most appropriate method of enhanced reliability within reasonable cost constraints.

3. Links

The 2Mps circuit between Canberra and Melbourne has been operating without fault since their installation in April. The Sydney /Canberra circuit performance is as noted above.

A 2Mbps current has been ordered to connect Brisbane and Melbourne. It is noted that the original proposal was to deploy this circuit to connect the Queensland and NSW AARNet Regional Hubs. However the incremental cost (of some \$30K pa) of extending this link into the AARNet National Hub was evaluated as being advantageous in engineering terms. The major benefits are a reduction in the number of critical points of failure, reduced traffic transit times for noted traffic flows, and accommodation of further growth in traffic between Sydney, Canberra and Melbourne without interdependence on Queensland traffic trends. It is anticipated that this link will be operational in November 1991.

A 2Mbps circuit has been ordered to connect Monash/Clayton to the Victoria Hub, as per the Board's recommendations of May. This circuit will be operational in September or October of this year.

The University of Melbourne, as project manager, has ordered a 10Mbps microwave circuit for the CSIRO Joint Supercomputer Facility connection to the Victorian regional hub. This circuit is anticipated to be commissioned in September 91. The circuit was completed on the 29th August, and initial end-to-end testing of the circuit has commenced at the time of writing of this report.

At the QUESTNET (QLD regional network of AARNet), held in July, the Queensland State Minister of Business, Industry and Regional Development announced a funding program for the installation of 2 Mbps circuits from the QLD hub to Toowoomba, Rockhampton and Townsville. The funding will be passed as a grant to the University of Queensland, with precise guidelines for expenditure. It is understood from discussions with departmental personnel that it is the intent of the State Government that the funding assistance with this infrastructure remain an integral component of the total AARNet structure. The department have been requested to forward a copy of the guidelines relating to the grant of monies to the AVCC, for information.

It is noted that funding for these circuits is to be established for a period of 18 months, after which time the recurrent costs (some \$75,000 p.a. for UCSQ, \$160,000 pa for UCCQ and \$250,000 pa for JCU) will have to be funded by the institutions concerned. The continued requirement for X25 switching capabilities in the AARNet equipment is unclear at present, as there is some uncertainty as to the precise details of the terminating equipment to be deployed on these links. Requests for additional information have been made to the Secretary of the QUESTNET Management Committee by AARNet staff. Additional information will be tendered to the AVCC and the AARnet Advisory Board as and when it is received.

QUT. Brisbane - CITEC - AARNet Grants.
X25 Equipment -

Within Western Australia the regional technical group will shortly be evaluating the feasibility of using ISDN facilities to upgrade the three tail loops in Perth, and possibly the backbone link to Melbourne or Adelaide. This work will be carried out in conjunction with AARNet staff.

The 256K International circuit is also being loaded consistently since its implementation in April. It is noted that initial consideration should now be given to the implementation of additional capacity at 384K, early in 1992.

4. New Member Connections

Following RMIT's withdrawal from VUT, a new 48K service has been installed to connect VUT to the Victorian Regional Hub.

The link to Ballarat University College has also been installed in July, following some delays on the part of Telecom in commissioning the bearer circuit.

The longer term status of the Victorian College and Deakin links is unclear while merger discussions take place between these two institutions.

5. CSIRO

Discussions have taken place between AARNet and CSIRO staff regarding two new IP links that will shortly be installed by CSIRO. These links will connect the CSIRO Headquarters site (Ainslie, Canberra) to CSIRO North Ryde and CSIRO Clayton. As both these sites are also connected to AARNet the primary intent of the discussions has been to ensure that stability is maintained within the routing domain.

A secondary intent has been to engineer the CSIRO and AARNet circuits within a mutual backup configuration between Sydney, Canberra and Melbourne. Once the stability of this configuration has been tested, and the functionality of the backup configuration proved, consideration will be given to cancelling the AARNet 48K backup Sydney/Melbourne link.

6. Affiliate Membership of AARNet

The attached report indicates the current status of the Affiliate membership program of AARNet. The program is proving successful in terms of the objectives in this area, and the level of new queries to AARNet staff are a minimum of two per day at present.

An information package has now been prepared to provide information about AARNet and the Internet. It is noted that some graphic presentation would be appropriate on this information pack.

7. Meetings Attended by AARNet Staff

There have been a larger than average number of meetings attended by AARNet staff over this period. A brief summary of these meetings is as follows:

RARE and IEPG meetings May 91. Mr Huston's reports of these meetings were tabled at the May meeting of the Board. The AVCC is pleased to inform the Board that Mr Huston has been selected as the chair of the IEPG.

CCIRN meeting, May 91. Dr Erskine's report of this meeting is attached. This meeting was held in parallel with the IEPG meeting.

INET '91, June 91. This was the inaugural meeting of the global research networks, with attendees from all continents. Of interest is the development of networking infrastructure in Eastern Europe and Central

and South America, and the attendance at the meeting by a number of the telecommunications carriers. A number of the issues discussed at the meeting form the basis of the discussion paper regarding commercial activities and the Internet. It is noted that the AVCC were granted an award of \$1000 to assist in travel expenses for this meeting by WorldCom line (the US carrier partner in the AARNet US link).

AUCDC July 91. Mr Huston presented a status report on AARNet to the computing Directors, and attended this meeting. Of note is the desire of this group to realize potentials of scale and common position in negotiating the purchase of computing hardware and software as a consolidated sector. Although a number of potential mechanisms were discussed, there was no clear outcome on a common preferred direction from the meeting, although investigations are proceeding.

WA AARNet Policy Committee Meeting July 91. A copy of Mr Elford's report of this meeting is available on request.

QUESTNet Winter Workshop, July 91. Mr Elford attended this meeting. As well as the State Government funding announcement for regional links the meeting included a number of workshops on issues relating to usage and services on AARNet.

IBM Pacific, July 91. Mr Huston attended this meeting, hosted by IBM Pacific, to discuss regional networking issues and the potential role of IBM Pacific. The outcome of this meeting is covered with the material relating to international activities and AARNet.

PACCOM 91 meeting, August 91. A report of this meeting is included with the international activities documents. This meeting was attended by Mr Huston, Mr Elford and Dr Erskine.

APCCIRN meeting, August 91. The minutes of this meeting are included with the international activities documents. This meeting was attended by Mr Huston, Mr Elford and Dr Erskine.

Australian UNESCO Science Network, August 1991. Mr Huston attended the August meeting of this body to inform members about AARNet and to highlight the potential of using AARNet electronic mail services within the Science Network.

8. Conclusions

Overall, progress within the previous three months has been effective, with the program continuing to achieve the broad objectives of the provision of service to the academic and research sector.

As the scope and number of activities undertaken by AARNet continue to grow there are emerging issues of resourcing this program, which are covered in the staffing paper to be considered separately by the Advisory Board.