

AV-CC

Australian Vice-Chancellors' Committee

(INCORPORATED IN THE A.C.T.)

Ref: AVCC/AARNET/9/91
10 February 1991

AVCC Memorandum

To: J. Mullarvey

From: G. Huston

Re: AARNet - US Link Capacity

As you may recall the 128Kbps link from Melbourne to the United States was commissioned into operation at the start of November last year.

This link was ordered in September 1990, following the consideration by the AARNet Advisory Board of a set of usage figures which indicated that the previous 56Kbps link was already reaching unacceptable saturation levels.

While the figures currently indicate that the increased capacity is providing a level of service to the AARNet client community at a level commensurate with current demand, it is suggested that further consideration of link capacity is necessary at this point in time in order to address potential capacity problems in a timely fashion.

Current usage figures suggest that some 6 Gbytes of traffic are being passed over this link each week, compared to a figure of 4 Gbytes/week some 3 months ago when the additional capacity was installed into the link. Attached is a chart indicating measured total traffic levels for this link on a weekly basis for the previous six months (the lighter shaded columns indicate periods where the measurement equipment failed for periods through the week and the reported figures are low). Also attached are the 15 minutes link utilisation graphs for the previous 10 weeks. These figures indicate a steady growth in traffic levels, with current traffic levels now reaching the usable capacity of the link. Further traffic will now "flatten" the daytime peak periods such that traffic congestion will last for longer periods each day.

While these figures in themselves indicate probable link saturation by about mid 1991, it should also be noted that additional growth is anticipated on this link in the period March to May as higher education institutions increase their levels of total network activity. Additionally the inclusion of additional domestic capacity with the forthcoming high capacity circuits along the Melbourne - Canberra - Sydney corridor will also place additional traffic on the international link. Thus the prediction of full link saturation by mid year appears to be a conservative judgement with these factors included. It should also be noted that this prediction matches the conclusions reported by the US PACCOM group following measurement of the link traffic at the US end.

It is accordingly suggested that initial planning work commence for a further upgrade of the satellite link to the capacity of 256Kbps, with a target implementation date of May / June 1991.

This potential link upgrade has already been noted by the AARNet Advisory Board during its consideration of the 128K link upgrade in September, and in accordance with the Board's discussion provision for 256K circuit capacity was included into the 1991 AARNet budget (as endorsed by the AARNet Advisory Board at their November 1990 meeting).

The cost of the existing OTC 128Kbps half circuit is \$12,500 per month, plus a further \$1,000 per month Melbourne tail end circuit charges (a total of \$174,000 p.a.). The 256K half circuit cost is \$25,000 per month, plus a further \$2,000 per month for Melbourne tail end charges. Upgrade installation charges are estimated to be a further

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\$20,000, most of which is required for the Melbourne tail end circuit. With a target cutover of May 1991, the total annual cost in 1991 for the US link is estimated to be \$304,500 for 1991.

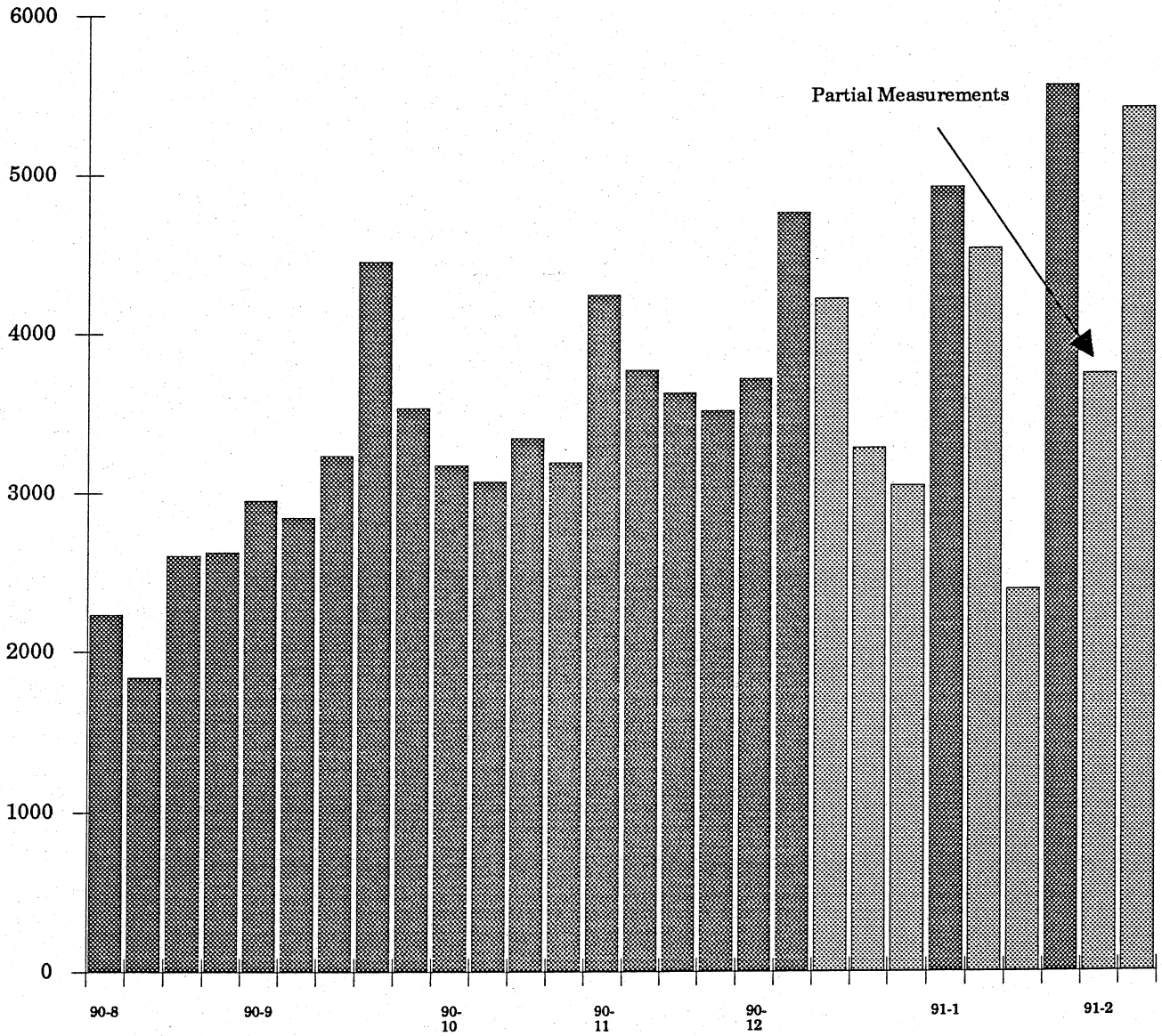
The US PACCOM group have advised AARNet that they have received 1991 funding for a comparable upgrade of the US half circuit to 256K from April 1991.

At this stage it is advised that satellite upgrades beyond the proposed 256Kbps capacity are not considered cost effective right now. A more prudent course of action is to plan on retaining the 256Kbps capacity until the end of 1992, and then examine the issues associated with the provision of international services on the PACRIM East undersea cable in 1993 as a longer term strategy.

Conclusion:

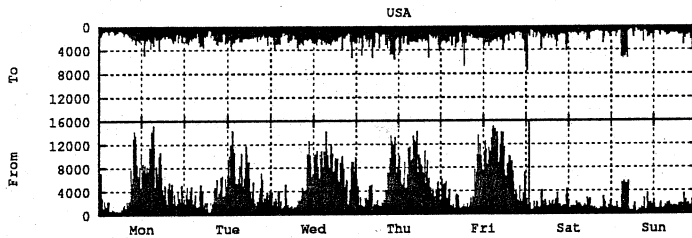
It is recommended that a proposal to implement an upgrade of the AARNet international link to 256Kbps be recommended to the AARNet Advisory Board for their consideration at the February 1991 meeting, with a accompanying recommendation that such an upgrade be implemented by mid-1991.

USA Traffic - Weekly Totals

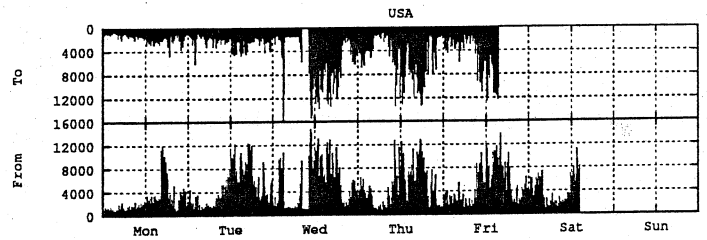


Traffic over USA Link over last 10 weeks - Bytes/Sec

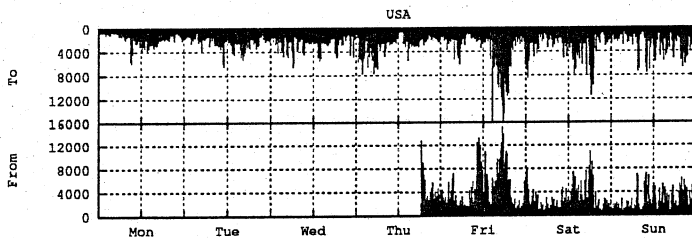
Week Ending 9th December, 1990



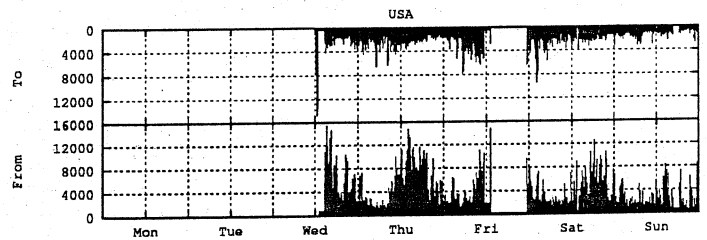
Week Ending 13th January, 1991



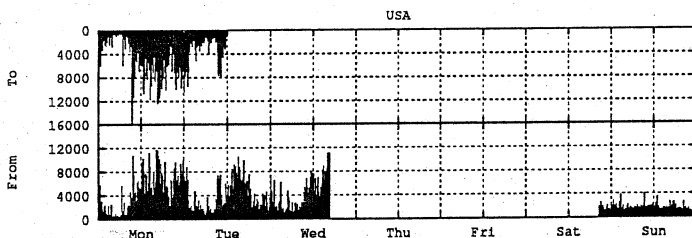
Week Ending 16th December, 1990



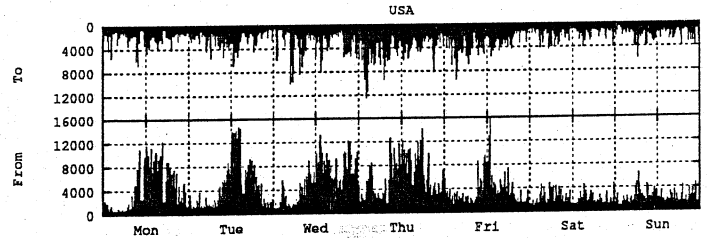
Week Ending 20th January, 1991



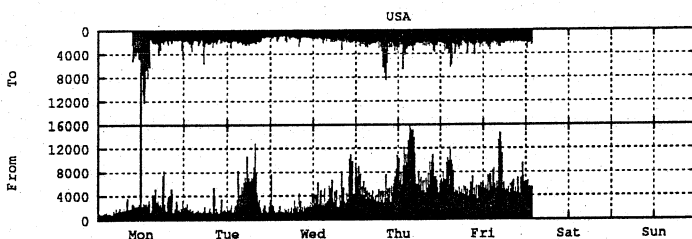
Week Ending 23rd December, 1990



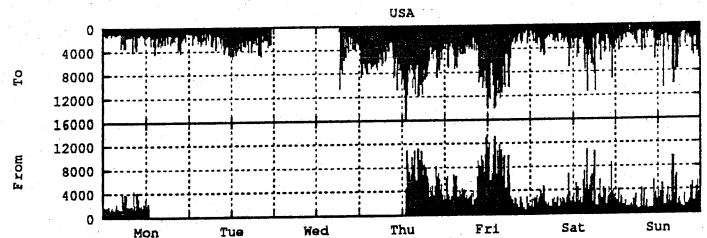
Week Ending 27th January, 1991



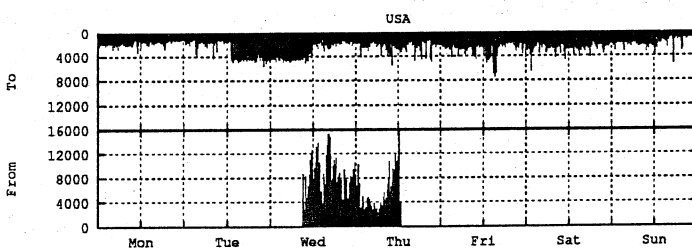
Week Ending 30th December, 1990



Week Ending 3rd February, 1991



Week Ending 6th January, 1991



Week Ending 10th February, 1991

