

EARN EXEC

EARN cost sharing - proposal

DRAFT

issued by
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February 7, 1989

The following is input for the discussion on the funding model for 1990 in the coming exec meeting. I regret I have not been able yet to come up with what I would expect to be an acceptable proposal to all. I also welcome the recent cost sharing proposal from Avi which should go into the discussion before and at the meeting. Avi's proposal happens to be an elaboration of one of the possibilities below, and although Denmark might well go along with it, I think we also have to consider the other possibilities.

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EARN cost sharing

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1. History.

The distribution of cost in EARN lends the basic idea from bitnet. At some point the network starts, e.g. by two sites connecting to each other by sharing a line. If a new site wants to connect, then it pays for the connection, and that is it, provided that any site accepts connection from others.

2. The present situation.

In 1988 each country in principle paid for its connection line to the network and a share of central costs including the TAL (Trans-Atlantic Line) dependent on the size or gross national product (GNP) of the country, according to the so-called RARE keys. In 1989 the share of central costs is calculated according to the mean value between the RARE keys and the GNP, although two countries (UK and Germany) have not accepted this principle.

The principle that each country has the responsibility for its own connection has led some countries to chose another, sometimes cheaper way than renting a dedicated 9.6bps connection. Thus Belgium plans to use bandwidth of an EASI (the IBM European Academic Supercomputer Initiative) link, which is free, and the Nordic countries are being connected via the lines of their ethernet (Nordunet). It seems difficult for EARN central management to obtain the funds thus freed, since the countries seem to find that these rationalisations should benefit themselves only.

In the future, some countries might chose to connect via MDNS.

Also, in the future some countries will host an EARN OSI node and thus have no international link to pay for.

Apart from these problems, there is a logical problem in the model. A country with much transit traffic may need to upgrade its line to the network and/or it may need to create extra spool areas because of traffic coming from other

countries.

3.All costs shared.

David put forward a proposal after which all costs for lines, switches, G-boxes, staff etc. were regarded as central, ie. EARN owns the whole network including lines to every country. The share to be paid would depend on the access bandwidth and to some extent on distance so as to reflect differences in connection costs for countries close to and far away from the backbone. This model is adapted to the coming X.25 infrastructure where it may be difficult to see which line is which country's connection. Also, countries would be allowed to group together with internal connections outside of the EARN network, only paying for the access bandwidth connecting one country in the group to EARN.

The model contains two sets of parameters, the band width parameter and the distance parameter. The choice of the parameter values is somewhat arbitrary, and different values lead to quite different cost distributions. The idea that EARN would 'own' the whole network would imply much greater central EARN control and probably necessitate a considerable reserve fund to be able to meet changes in the countries' requests or in data flows. In essence, EARN would operate a managed data network service.

4.Central costs shared according to bandwidth.

One weakness in that model is the fact that a new country joining might mean extra cost to the existing members if the distance factors were not very close to actual line cost for that country. But if they exactly mirrored that cost, one might as well go back to the principle of the country paying for the connection. The new idea would then be to share central cost according to bandwidth. This would essentially group countries into two groups, 64 kbps and 9.6 kbps countries, and probably the degree of use varies much more between e.g. France and Luxembourg. So the model would inspire countries to group together, like the Nordic countries have done, to create groups which reasonable match the two possible access widths.

An alternative would be to offer a more continuous variety of band widths than the two options normally offered by the PTT's. That is, if the switches have this facility, a country being connected via e.g. a 9.6 kbps line to a switch might only get and pay for e.g. 3.6 kbps through that switch to the rest of the network and the TAL.

5.MDNS.

If MDNS materialises, then EARN might not need any lines at all some time in the future. After the 'free' pilot year, either EARN would centrally 'buy' part of MDNS and distribute cost according to some principle, or each country would buy the access to MDNS, and hence be able to to communicate with EARN nodes in other countries, and the EARN budget would only cover operations, development projects, G- and E-boxes, any EARN TALs etc.

But we would still need a model for sharing these costs.

6.Payment according to usage.

Some time in the far future, cost will probably be distributed according to usage, like telephone, telefax and ordinary mail. In the present environment,

most countries will probably prefer to operate with fixed budgets, but with statistics it might be possible to approximate payment after usage. It would be necessary to be somewhat inaccurate using e.g. historical data from one year as a base for the fixed budget for the next, and also the problem of list and file servers would have to be solved, so as to have the country requesting a file pay for it instead of the country sending it.

It does not seem likely that sufficiently reliable statistics will be available or that the file server problem will be solved before the coming BOD meeting. But in any case, statistics could be used to as an indication as to whether actual use of the network is in any way related to the different distribution keys.

7. Proposal.

Let us first make two principal decisions:

A. Do we keep the principle that the connecting link is a country decision and at country cost, or will EARN include it in central costs?

B. Do we distribute central costs according to country size (GNP, RARE keys or some negotiated compromise), according to access band width, or according to usage of the network (assuming that a reasonable measure can be developed and agreed as a basis for fixed contributions for the next year)?

Once the principles are agreed, it would hopefully be easier to agree on a cost distribution for 1990 (as well as the outstanding 1989 problems), even if the tools are not ready today.