

'USA should fund half transatlantic links'

[MUNICH & WASHINGTON] The United States should pay half the costs of the circuits linking its research networks to those in other continents, according to a paper published last month by Renater, the French research network organization.

The United States does not at present contribute at all to links with Canada and Japan, and it pay less than 10 per cent of the costs of transatlantic links with Europe.

The debate about who pays for intercontinental links has become heated in recent years because of the growing costs. The estimated costs of the Europe-US links, whose capacity of 270 megabits per second (m.b.p.s.) is expected to double in the next two years, are around \$50 million a year.

The disparity has arisen for two reasons: the history of the Internet, and the decision of the US National Science Foundation in 1995 to shut down its own network, NSFNET (see *Nature* 387, 8; 1997).

A decade ago, universities and research institutes outside the United States were happy to pay the full cost of intercontinental connections to gain access to scientific information on Internet-based US research networks, as they had relatively little to offer the US research community in return.

Having become accustomed to such courtship, the United States is proving unwilling to help to pay for connections now that the balance of potential information exchange has evened out. National research networks, many operating with the same level of broadband capacity that the United States now uses, have been developed in many countries outside the United States.

Whereas research agencies in many countries provide a special network backbone for use by universities, such as JANET in the United Kingdom, the NSF in the United States decided to stop doing this in 1995. Encouraged by pro-market sentiment in the Congress, the agency shut NSFNET and told universities to use one of several

commercial networks instead.

But, since that decision, an unexpectedly sharp growth in commercial Internet traffic has resulted in severe congestion, and researchers with large data-transfer requirements at US universities are scrambling to join the experimental, high-speed 'Internet 2' network being developed by the NSF (see *Nature* 380, 377-381; 1996).

US officials continue to insist that they will not subsidize international Internet links when they do not subsidize domestic ones. Steven Goldstein of the NSF's networking and communications division says the agency has a budget of \$50 million for research and infrastructure, and its advisory board has suggested that 10 per cent of this should be spent on international links.

In 1995, the G7 group of industrialized countries approved an initiative introduced by US Vice-President Al Gore to develop an integrated worldwide information infrastructure. As part of this initiative, a working group called the Global Interconnection of Broadband Networks (GIBN) was set up.

At its meeting in Tokyo in January, GIBN, which comprises representative experts from all G7 countries, agreed that it was necessary to establish an international infrastructure for broadband applications and other requirements of science and education, but that a fairer way of sharing the costs of intercontinental links should be found. France agreed to develop a model for cost-sharing, based on links between Europe and the United States, through Renater.

The model concludes that the user requirement for transatlantic access in Europe and the United States is roughly equal, and that payment should therefore be shared equally. Because telecommunications costs are much higher in Europe than in the United States, the model allocates cost-sharing on the basis of half-circuits, with either side financing its own half.

The model also assumes the rationaliza-



tion of the fragmented capacity in Europe which is spread across 10 links, in the expectation of the establishment of a single interconnection point on either side of the Atlantic. It will be discussed at the next GIBN meeting in October.

It has already received favourable responses from European research networks including the DFN, the German research network, which launched its own 90 m.b.p.s. transatlantic link this year. The full DM20 million (\$11.4 million) annual costs of this link are met by German universities and research institutes, which causes some resentment at the DFN.

In May the NSF issued a call for proposals to support interconnections between the United States and other countries, with an annual budget of \$4.5 million. It will spend another \$0.5 million on a single connection point, in Chicago, through which international users will be able to access Internet 2.

Dai Davies, general manager of Dante, the company in Cambridge, England, that organizes international network services for the European research community, describes the budget as "insultingly small".

Goldstein says that the United States does not yet have a view on the French model, but he holds out little hope for a larger US contribution to international networking costs. "We only have a fixed amount of money, and we don't provide commodity networking for our own universities," he says. "We understand the Europeans are angry, but there isn't a lot we can do about it."

The first intercontinental supercomputer link using high-speed telecommunications networks was established last month between two Cray T3E supercomputers at the University of Stuttgart and the Pittsburgh Supercomputing Center. This is the first international link using the very-high-speed Backbone Network Service (vBNS), which connects all US supercomputers. The transatlantic connection is provided on an experimental basis at no cost by the Canadian company Teleglobe.

Alison Abbott & Colin Macilwain

Encryption technology divides policy-makers

[LONDON] The United States clashed with European Union (EU) countries last week over government controls on encryption technology. Their ministers were meeting in Bonn, Germany, to set common standards for communication networks such as the Internet.

Despite signing a joint statement with the EU supporting 'free choice' in the sale and use of

encryption products, US officials maintained that they had no intention of relaxing US controls banning the export of sophisticated encryption products.

The US commerce secretary, William Daley, said he understood that encryption was needed to prevent eavesdropping during the electronic transmission of credit card numbers and sensitive

documents such as contracts. But he warned that the technology permitted should not be so sophisticated as to allow terrorists and criminals to hide their activities from law enforcement agencies.

EU ministers, as well as business leaders in the United States and Europe, believe that the restrictions inhibit trade in encryption technology. □