

Memorandum of Understanding

30th December 1991

1. WHEREAS one of the most urgent requirements for the European Research Networking community is to progress the establishment of well managed pan-European multi-protocol backbone network services
2. WHEREAS the recognition of this requirement was expressed by the RARE CoA in its May 1990 meeting in Killarney, and documented in the EEPG report tabled to the CoA in May 1991 in Blois, and was reviewed by a task force initiated by SURFnet in September 1990
3. WHEREAS the IXI network addresses the immediate requirements for pan-European X.25 backbone network services and whereas the requirements for pan-European Internet IP and ISO-CLNS backbone network services are not currently adequately addressed
4. WHEREAS it is expected that the requirement for well managed pan-European multi-protocol backbone network services will be addressed by the proposed Operational Unit at some future date
5. WHEREAS the SURFnet initiated task force recommended that the immediate Internet IP and ISO-CLNS services requirements be addressed by the creation and growth during 1992 of a kernel backbone by combining and enhancing existing facilities and providing managed services
6. SEEING THAT an initiative - Ebone 92 - has been taken by interested parties to carry out this creation and growth of a kernel backbone, by an approach described in this Memorandum of Understanding (MoU) and to be executed by the parties hereto
7. SEEING THAT this Ebone 92 initiative is intended to complement and be consistent with existing pan-European backbone network services, to address the need for better managed Internet IP and ISO-CLNS network services, and to be an interim activity pending the establishment of the proposed Operational Unit
8. SEEING THAT this initiative is not intended to inhibit in any way the development of other pan-European network services
9. SEEING THAT the RARE CoA has welcomed the Ebone 92 initiative and endorsed the approach; RARE recognises that the Ebone 92 proposals are complementary to the existing IXI services and to the 2 Mbit pilot and are consistent with the plans for the establishment of a multi-protocol network and the Operational Unit
10. WHEREAS the envisaged benefits include savings in telecommunications costs through more cost effective use of high speeds, and improved service through the provision of a resilient

backbone network linking both European and USA networks

11. SEEING THAT the services and envisaged benefits are to be enjoyed by the national and international networks and international research institutions who participate in this Ebone 92 initiative

12. WHEREAS an ad hoc consortium approach has been proposed to carry through the initiative whereby the infrastructure, the services, and the management thereof will be provided by temporary no-charge contributions from the interested parties, herein referred to as Contributing Organisations and listed in Annex 1

13. SEEING THAT such contributions represent re-deployment of resources of the Contributing Organisations to shared use, for the originally intended purpose, and with shared benefits of scale

14. RECOGNISING THAT various equipment suppliers have made and continue to make substantial contributions to the funding and management of research networking resources in Europe

15. WHEREAS the backbone network will have a defined boundary for purposes of technical interfacing and managing the network services, and such boundary will in no way constrain the use of telecommunications capacity and equipment by the Contributing Organisations, other than their voluntary provision for the purpose of this agreement

16. THEREBY contributions of telecommunications capacity and equipment may be provided by Contributing Organisations within the terms of sharing agreements as is current practice within the network community and thereby service levels will be as "best efforts" of the Contributing Organisations

17. WHEREAS the network service specifications will be those in common usage in the research community, i.e. Internet IP as per Internet standard for IP in RFC 791 et seq, and ISO-CLNS as per the specifications used by the RARE/COSINE CLNS Pilot Project

18. WHEREAS the network infrastructure is to be formed with minimal upgrading of existing available telecommunications capacity and node equipment

THEN

the undersigned Contributing Organisations having intent to establish a common managed interim European Backbone Network providing value-added open networking services for production Internet IP and pilot ISO-CLNS to the Academia and Research community

AGREE TO THE FOLLOWING:

1. Objective and Use Policy

Ebone 92 is intended to be an interim backbone infrastructure providing value-added open networking services for Internet IP and pilot ISO-CLNS created by combining and enhancing existing facilities. Subsequently in 1993, it is expected that Ebone 92 services will be integrated into full multi-protocol services and the operational responsibilities passed on to the RARE proposed Operational Unit, on the assumption that the Operational Unit has been successfully created by that time. If that is not the case, operational support will be obtained elsewhere.

The target group for Ebone 92 services will be all the national and international networks and international research institutions providing networks services for users at higher education and research sites, including those involved in industrial research.

There will be no restrictions on the content of traffic on the Ebone 92 network. It will be up to the networks and institutions connected to Ebone 92 to restrict traffic according to their own norms and legal requirements. Ebone 92 is a not-for-profit service provider. The Ebone 92 infrastructure will be composed of links (as defined below) and Ebone switching equipment providing value-added open networking services targetted for academic and research purposes.

2. Technical principles

The Ebone 92 infrastructure complies in principle to the general model of an open networking multi-protocol backbone. This model identifies:

- the Ebone Boundary Systems (EBSs), interconnected by links, forming the resilient backbone;

and:

- the Regional Boundary Systems (RBSs), providing backbone access for networks via a link to an EBS.

EBSs are physically installed on the premises of designated Contributing Organizations. These sites have at least two international links connecting to other EBSs. Sites hosting an EBS are called Backbone Sites. An RBS may be co-located at a Backbone Site or may be connected to an EBS via a "tail" link.

The infrastructure will be shared with other organisations supporting other services, such as X.25 and proprietary protocols. In the case that a link is in practice implemented in the form of a sub-channel of a higher capacity line, the multiplexing equipment used to divide the bandwidth is not part of the Ebone 92 infrastructure.

3. Management principles

The management and operation of the Ebone 92 infrastructure comprises three aspects:

- 1 - Operation of the EBS systems and Ebone links;

- 2 - General operational functions including incident reporting and

support;

3 - Coordination of activities for the execution of the Memorandum of Understanding, external liaison, and resolution of disputes.

Aspect 1 may, as appropriate, be delegated to operational staff of the Backbone Sites. Annex 2 defines, for each EBS, the actual operational organisations. Each RBS and its associated link to an EBS is to be operated according to Ebone 92 policy, but they do not come under the domain of Ebone 92 infrastructure operation and management.

Aspect 2 will be performed by the Ebone Operations Team (EOT) composed of operational staff funded or otherwise provided by Contributing Organizations.

Aspect 3 will be performed by a Management Committee consisting of five members appointed by and responsible to the Contributing Organisations.

Any disputes between the signatories to this MoU concerning execution of this MoU which cannot be resolved by mutual consent shall be referred to the Management Committee for mediation. If one of the members of the Management Committee or a member's organisation is involved in a dispute, then that member shall not participate in the Management Committee for that issue.

4. Services

Ebone 92 will offer two services:

- Internet IP (level 3) production service;
- ISO-CLNS (level 3) pilot service.

Contributing Organisations will have full access to these services for the purpose of their own provision of networking services as described above in "Objective and Use Policy", provided the commitments to contribute (as specified in Annex 3) are honoured.

5. Provision of Ebone 92 Infrastructure

Telecommunications capacity

Telecommunications capacity (as specified in Annex 2) will be contracted by the Contributing Organisations and made available at no charge for use by Ebone 92 as part of a managed value-added service for the term of this agreement. These links may be provided by PTT's or PTO's directly, or by other networks, and may be based on leased lines, multiplexed channels, X.25 services, or other appropriate technologies.

Equipment

Equipment forming an Ebone Backbone System is to be provided on a loan basis by Contributing Organisations who will also provide maintenance cover. On termination of this agreement, no obligation exists on the Contributing Organisations to continue to provide or maintain the equipment.

6. Financial agreement

The cost of providing the Ebone 92 services, including cost of telecommunications capacity, equipment, maintenance and operation, will be paid by the Contributing Organisations.

The total costs have been estimated and contributions from individual organisations have been determined. The contributions are listed in Annex 3. Ebone 92 shall make neither profit nor loss. Any necessary financial transfers will be realized by RARE who will keep records of the Ebone 92 financial situation as a separate project. Reporting and auditing will comply with RARE norms and legal requirements.

7. Additional organisations becoming Ebone 92 Contributing Organisations

Additional organisations may subsequently become Contributing Organisations with the mutual consent of the initial Contributing Organisations, which will not unreasonably be withheld, by:

- providing resources for connection to / integration with the Backbone;
- provision of funds to cover the incremental operating costs;
- signing this MoU.

8. Term of Agreement

This agreement is valid until the end of 1992.

All parties elect to contribute for the full term. Any extension is to be agreed by all interested parties in writing not later than three months before the end of 1992 or any subsequently agreed termination date.

SIGNED FOR AGREEMENT BY THE CONTRIBUTING ORGANISATIONS