RIPE NCC Funding

Rob Blokzijl
Daniel Karrenberg

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1. Introduction

RIPE (Reseaux IP Europeens) is a collaborative organisation open to all European Internet service providers. The objective of RIPE is to ensure the necessary administrative and technical coordination to allow the operation of a pan-European IP network. RIPE does not operate a network of its own.

The RIPE Network Coordination Centre supports all those RIPE activities which cannot be effectively performed by volunteers from the participating organisations.

The RIPE NCC started operation in the second quarter of 1992 and currently has 3 permanent staff members. The RARE association provides the legal and financial framework for the NCC. Funding for the first year of operation of the NCC has been provided by EARN, the full national members of RARE, Israel and EUnet. These organisations have agreed to guarantee funding of NCC operation during the remaining three quarters of 1993. At the same time they have expressed that -while they guarantee continued funding- it is imperative that the remaining European Internet service providers start contributing to NCC funding as soon as possible. As all European Internet service providers benefit from NCC services, the costs should be shared appropriately.

Because of this RIPE seeks to establish agreement about a funding model among European Internet service providers and other organisations interested in contributing.

2. Scope

In this paper, an attempt is made to analyse the problem by categorising the services and user communities of the NCC, discuss some of the possible options, and to arrive at an agreed framework for RIPE NCC funding.

Funding of local registries in general and local "non-provider" registries in particular is outside the scope of this paper.

Also the actual level of charges is to be agreed separately once there is consensus about the model outlined in this paper.

The model has been approved by the 15th RIPE meeting in April 1993.

3. Categories of NCC Services

When approaching the problem from the NCC user angle one can identify several classes of users according to the different services the NCC offers. Therefore we present the main services presently provided by the NCC first. For details about these services, please see the RIPE NCC Quarterly reports.

3.1. Information Service - RIPE Document Store

The biggest and most diverse group of NCC users are those making use of the NCC information services. The information services consist of various ways to retrieve information from what is called the "RIPE Document Store". Despite the name this carries not only documents but also software tools related to network management. The scope is wider than just RIPE but restricted to information relevant to Internet and RIPE activities. For instance the document store contains mirror images of the RARE, EBONE and IETF document stores including all RFC and all Internet draft documents. In the Internet tradition the document store is available to all sites on the Internet and additionally accessible from the public X.25 networks as well as EuropaNet(IXI). Users do not need to register before using this information service. Logs are kept about usage and summaries are published in the RIPE NCC Quarterly Reports. The user community of this service is the whole worldwide Internet.

3.2. RIPE Network Management Database

The RIPE network management database holds information about European IP networks (network in the sense of IP network numbers), DNS Domains, Autonomous Systems and contact persons for these. Further it contains routing policy information. Users do not need to register before querying the RIPE database. Logs are kept about usage and summaries are published in the RIPE NCC Quarterly Reports. The database is available to the whole worldwide Internet community. The community represented in the database itself is limited to European organisations.

3.3. European Regional Internet Registry

The RIPE NCC functions as the European regional registry for Internet numbers. The most important such numbers are the IP network numbers, which constitute the IP address space. The NCC provides a mechanism which enables European organisations to obtain the address space they need in an efficient manner without the need to refer to the global registry in the US. At the same time the NCC ensures that usage of the address space is fair and address space is not wasted.

The user community for the regional registry functions is all European organisations using TCP/IP protocols and desiring unique addresses. Note that this is larger than the community connected to what we call the European part of the Internet.

In principle the NCC achieves the above by working through local registries. These are IP service providers assigning address space to their customers. Those who are not customers of an IP service provider (yet) ar served by local "non-provider" registries. Looking at it in this hierarchical fashion the direct user community are the European IP service providers and the "non-provider" registries which handle the vast majority of the registry actions locally without involvement of the NCC.

Wherever a local registry has not been established the NCC assigns address space directly. The NCC also handles all requests for larger amounts of address space directly, especially those for class B numbers.

3.4. RIPE Support

The RIPE NCC supports RIPE activities in general. This includes providing mailing list service as well as some secretarial service to RIPE and the RIPE working groups, preparation and logistics for three RIPE meetings a year in varying locations for an increasing amount of attendees. The last meeting was attended by approximately 90 people. The NCC also participates in global activities such as the IETF on behalf of RIPE.

The direct user community of these services are the organisations participating in RIPE. The indirect user community are all organisations connected to the European part of the Internet because RIPE is the organisation coordinating the European Internet.

3.5. General Coordination

The NCC also performs a host of small and/or incidental coordination functions related to the European part of the Internet which are not easy to categorise. This is normal for a focal point of distributed activities like the RIPE NCC.

4. Categories of RIPE NCC Users

Based on the different services offered one can distinguish different categories of NCC users. We will do this in a hierarchical fashion by defining a number of user categories which are progressively smaller subsets of each other.

4.1. The Internet at Large

The most general category is users of the Internet worldwide. The information and database querying services of the NCC are open to the whole global Internet community. Charging for these services is next to impossible in the current Internet framework because users do not need to register before using these services. The sheer number of users makes traditional billing methods unworkable as well. Even if it was practicable to bill for these services it would probably be counterproductive because their usage helps keeping the Internet coordinated and keeps quite a bit of load off the NCC itself as well as the help desks of the service providers.

4.2. European Internet Users

The next category is all organisations connected to (some parts of) the European Internet. This obviously is a subset of the global Internet users. In addition to the services used by the previous category these organisations depend more on the RIPE database registration service because of the role the database plays in distributing routing policy information.

Because these organisations are connected they are also more likely to benefit from the general coordination activities of the RIPE NCC.

Charging these users could be done in form of a periodical database registration charge. However this could work out counterproductive to the goal of manageability of the European Internet if organisations or service providers find ways of achieving the desired connectivity without registering. Also the measurement of use and the charging model will be hard to agree. The number of entities to bill is still large.

An alternative that has been discussed in the past is to charge based on the address space assigned to an organisation. Once could charge either per assignment or one could "rent out" address space. The latter would provide an incentive to use address space prudently. The limits of practicability here are the number of organisations, the legal implications, especially with holders of already assigned address space. Another prerequisite is global agreement on the charges to prevent "grey imports". Our conclusion is that this is impractical for the time being but could be valuable in the future, especially as a tool to rationalise address space usage. It remains doubtful however whether it will ever become practicable and economical to do.

4.3. European Internet Service Providers

Each organisation in the previous category either is connected through a service provider or is itself such a service provider. The service providers make use of all NCC services the previous category uses. However they do so much more directly than their customers. The service providers interact directly with the NCC for the registry function, as members of RIPE and when using the RIPE database for trouble shooting and routing. For many interactions with the NCC the service providers act on behalf of their customers.

Charging the service providers could be achieved in the same way as above through a database registration charge and/or a registration charge, with the same drawbacks.

An alternative charging model which becomes viable when charging via the providers is to charge a fixed annual fee depending on the rough size of the provider. This way a reasonably fair distribution of the costs can be achieved without spending a lot of resources defining and collecting the usage data used for charging.

The big benefit of funding via the service providers in general is that the number of entities to bill is relatively small and -even more importantly- there is a chance to come to a consensus about the charging model. This way the wider European user community will be funding the NCC services from which they benefit via the providers. So the users having a direct benefit pay, albeit indirectly.

4.4. Individual TCP/IP Users

A category outside of the previous hierarchy are all organisations using TCP/IP in Europe who are not customers of a service provider. Typically these are organisations operating local area networks, but some are operating substantial networks inside their organisation. This community uses the regional Internet registry and database registration services in order to obtain unique addresses in case they want to connect to the Internet at large or to other organisations later on.

The only basis for billing which is obvious for this group is the registry service.

5. Proposed Model for 1993/1994

Looking at the services and the user communities the most practical general model is funding via the service providers. Looking at the problems described above it is clear that it will be next to impossible to agree quickly -if at all- on the metrics for charging. Therefore we propose to establish four categories of service providers with associated charges in ECU. The charging levels below are indicative and are expected to change during the ongoing discussions.

Category	Annual Charge (1994)	Charge Q2-4 1993
Large	10000	7500
Medium	6000	4500
Small	3000	2250
Very Small	1000	1000

The service providers will determine their category themselves. The categories are geared towards providers operating at the national or regional level. International service providers with a wider geographical scope may find it appropriate to make commitments above the level of "Large" and indeed this has happened already. Also interested organisations who are not service providers have indicated their willingness to contribute and the level of their contributions will be independent from the categories for service providers.

In order to provide guidance, all firm commitments will be published as they are received. Also the level of all actual contributions will be published once a year. For additional guidance service providers are welcome to contact the RIPE chair.

5.1. Possible problems with the charging model

One problem is to convince all service providers to contribute to NCC funding. Given the spirit of RIPE cooperation and the obvious benefit service providers derive from NCC services and the relatively low charges, we expect this to be achievable.

The only group that would not be charged this way but directly benefiting from NCC services is the individual TCP/IP users. There are two possibilities to deal with this. Either there is consensus among the service providers that a large part of these are future customers and thus "covered" or a separate charging model needs to be developed for registration services for this group. As described above charging for registration based on either a per assignment charge or "rental" address space is not really practicable at this point. Appendix B contains some material about possible models for this.

6. Conclusions

The European Internet service providers will commonly fund the RIPE NCC according to a charging scheme based on a small number of provider categories. Service providers will determine their own category and the level of all contributions will be published.

Appendix A - Further Actions as of May 1993

During preliminary discussions at the 14th RIPE meeting there was a rough consensus on this model and further discussion was agreed since some of the service providers were not present.

At the 15th RIPE meeting it was agreed that the scheme outlined in this paper shall form the framwork for NCC funding. It was further agreed for the time being individual TCP/IP users will not be charged for registration services.

RIPE and RARE will commonly approach all service providers immediately with this draft proposal and ask them to make voluntary contributions in 1993 and formal commitments for funding according to this scheme in 1994.

RIPE has formally asked RARE to continue providing the financial and legal umbrella for the RIPE NCC until the end of 1994.

Appendix B - Some ideas about charging for registry service

The material in this appendix is intended to act as a base for discussion in case there is consensus that individual organisations need to be charged for registry service. It has not previously been discussed in a wider forum and thus cannot be more as a means to focus the discussion.

The registry services are used by individual organisations as well as by service providers acting on behalf of their clients.

As described above charging based on registration actions or rental of address space is very difficult if not impossible to get right.

When one looks at the resources used by registry actions it is the requests for large amounts of address space from individual organisations which take most of the time. These organisations cannot rely on the resources provided by a service provider to help them develop an appropriate addressing plan and provide the necessary information to the registry concisely. Consequently they use the resources of the registry to arrive at these goals. Thus it is reasonable to charge for this resource usage while well presented requests for small amounts of address space should probably be covered as an overhead.

Details of this would need to be discussed and worked out further.