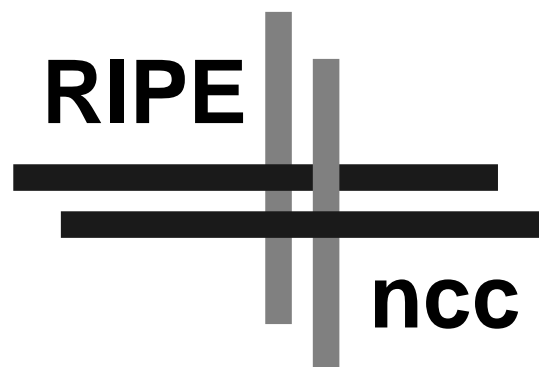


Réseaux IP Européens

Network Coordination Centre

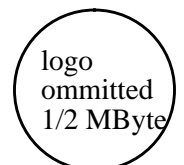


QUARTERLY REPORT

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RARE



The RARE association provides the framework for NCC operations.

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Introduction

RIPE (Réseaux IP Européens) 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.

RIPE has been functioning since 1989. Currently more than 60 organisations participate in the work. The result of the RIPE coordination effort is that the individual end-user is presented on their desktop with a uniform IP service irrespective of the particular network his or her workstation is attached to. In December 1992 more than 284,000 hosts throughout Europe are reachable via networks coordinated by RIPE. The total number of systems reachable world-wide is estimated at more than one million.

The RIPE Network Coordination Centre (RIPE NCC) is a European organisation chartered to support all those RIPE activities which cannot be effectively performed by volunteers from the participating organisations. As such, it provides a wide range of technical and administrative support to network operators in the Internet community across Europe. The charter of the NCC is formally described in the NCC Activity Plan (document `ripe-35` in the RIPE document store). The RIPE NCC currently has 3 permanent staff members. The RARE association provides the formal framework for the NCC. Funding for the first year of operation of the NCC is provided by EARN, the national members of RARE, Israel and EUnet.

This is the third quarterly report produced by the RIPE NCC. As before, comments and suggestions are very welcome.

Note on Statistics

The arrangement of categories including country codes in some statistical tables and figures have been standardised to make the data more easily comparable between different tables and editions of these reports. As a consequence some categories appear with no data and/or seemingly nonsensical combinations.

In the PostScript version of this document much information is presented both in graphical and in table form. This apparent duplication is necessary because the graphics cannot be represented in the ASCII version of the document which has to contain the same information as the PostScript version.

Management Summary

RIPE NCC services have been running smoothly during the reporting period. We have made numerous small improvements in a number of areas. No major additional activities have been started. In general the three months have been used to further consolidate the services and activities as well as the procedures for interaction with external organisations, mainly the local Internet registries.

Delegated Internet Registry

Procedures for the European Internet registry have been further consolidated and continue to run smoothly. More than 6000 network numbers have been assigned during the reporting period. Interactions with the global Internet registry can still be improved.

RIPE Database

The next big functional improvement of the RIPE database will be the inclusion of routing information. To this end an update procedure for this information has been designed and implemented. During the next period the specifications for the representation of routing information will be refined and the database populated with this information.

Information Services

The NCC information services have been running smoothly and continue to be well used. We have installed a World Wide Web (WWW) server in order to provide an additional access method to the RIPE document store.

New Projects

Preparations have been made for the start of project work to be executed at the NCC in conjunction with the RARE technical programme. One of these projects is expected to help with the adding of routing information to the database.

Priorities

There still have not been enough resources to actively pursue activities from the activity plan which so far have not been started. The NCC still seeks guidance from RIPE as to the relative priority of these activities

Activities

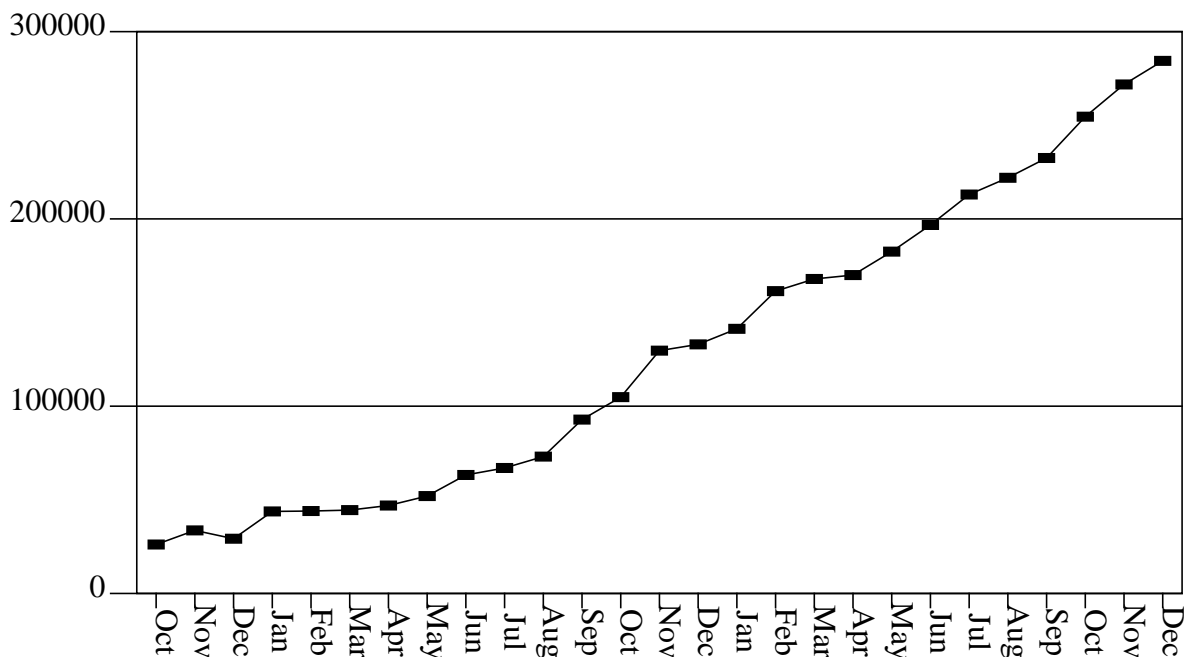
DNS Coordination

There has been a slight change in the collection process for the DNS data for the RIPE Hostcount. For the two largest countries, Germany and the United Kingdom, the collection of the data is done within the country, and afterward collected at the NCC, for inclusion in the statistics. This change was done to decrease the time needed for gathering all the data, as well as to decrease the impact of connectivity problems encountered when gathering all data centrally. Organisations willing to participate in the distributed counting mechanism should contact the RIPE NCC.

Other than that, nothing much has changed in the procedure. The latest hostcount shows a total of over 284,000 hosts in Europe.

In the hostcount, any machine that appears in the Domain Name System with a A record is counted as a host. Hosts with more than one A record are only counted once, and hosts with the same A record, but different domain names inside the same top level domain are also counted just once. All DNS output, not just the A records, are saved and are available in the RIPE document store, two files for each country: the standard output, and the error messages. Please check the README file in <ftp://ripe.net/ripe/hostcount> for more details.

RIPE DNS Hostcount History 1990-1991-1992



| | | |
|------|-----|--------|
| 1990 | Oct | 26141 |
| | Nov | 33665 |
| | Dec | 29226 |
| 1991 | Jan | 43799 |
| | Feb | 44000 |
| | Mar | 44506 |
| | Apr | 46948 |
| | May | 52000 |
| | Jun | 63267 |
| | Jul | 67000 |
| | Aug | 73069 |
| | Sep | 92834 |
| | Oct | 104828 |
| | Nov | 129652 |
| | Dec | 133000 |
| 1992 | Jan | 141308 |
| | Feb | 161431 |
| | Mar | 167931 |
| | Apr | 170000 |
| | May | 182528 |
| | Jun | 196758 |
| | Jul | 213017 |
| | Aug | 221951 |
| | Sep | 232522 |
| | Oct | 254585 |
| | Nov | 271795 |
| | Dec | 284374 |

Internet Registry

Delegated Registry

In the last quarterly report (RIPE document ripe-73) the recent changes in the administrative arrangements for obtaining IP numbers were described. Briefly under the new arrangements from August 1st 1992 onwards all European requests for IP numbers have been forwarded by the global Internet registry (IR, otherwise known as `hostmaster@nic.ddn.mil`) to the RIPE NCC for processing. Thus the RIPE NCC has successfully fulfilled the role of regional Internet registry for a period of 5 months, handling both e-mail, fax and letter applications. This means that Europe is operating for quite some time already ahead of schedule at stage 3 of the 'Schedule for IP Address Space Guidelines' (RFC1367).

Recently some slight problems have manifested themselves in the interaction between the RIPE NCC and the global registry. We assume that this is mainly due to general cautiousness of the IR caused by the ongoing solicitation procedure for the INTERNIC in the US. Since an award has been made on the very last day of the reporting period we will now work to get these problems resolved quickly. Our reporting of the problems should not be construed as criticism of the IR or the people involved there. The working relationship with them has been excellent.

Registration Procedures

Current procedures as described in the last quarterly report and document ripe-72 have been streamlined and improved upon significantly. Facilitating this, has been the increase in the number of local registries. Especially the number of local 'non-provider' registries has increased. These are registries to whom the NCC is able to forward all requests from organisations without IP service providers. The work of the 'non-provider' registries is much appreciated, especially since they are not charging for this community service. Also additional IP service providers have made themselves known to the NCC, enabling further delegation of blocks of class C numbers.

To date, local non-provider registries exist for the following countries: Austria, Switzerland, Germany, Denmark, Spain, France, Great Britain, Hungary, Israel, Italy, The Netherlands, Norway, Poland, Sweden and The Soviet Union (covering the states/countries which comprised the former Soviet Union). New registries established since the last quarter comprise Denmark, Poland and Italy.

We are also beginning to notice a shift in the flow of requests. There are more direct requests coming into the NCC, bypassing the global registry. This is due to information about new procedures slowly spreading throughout the Internet.

Thus when an application is received by the NCC for an IP network number there are two possible actions. Either the application is forwarded to a local registry and a letter is sent to both the applicant and the local registry informing them of the action. Included in the letter are contact details for the relevant local registry. Alternatively, if no appropriate local registry exists, the application is processed directly by the NCC.

The local registries send information about the assignments they make to a special mailbox at the NCC for automatic inclusion in the RIPE database and forwarding to the global registry. During the reporting period the latter forwarding has been automated using a general exchange format for Internet registration databases agreed by the DDN NIC (global registry), MERIT and the RIPE NCC. The RIPE NCC has fully implemented automatic forwarding of all European assignments using this exchange format. However the automatic forwarding procedure has been stopped on request of the DDN NIC until the necessary software is operational there.

Class B Network Numbers

The NCC still performs all actual class B assignments. The current procedure is to briefly evaluate the request, if needed consulting an appropriate local registry. In approximately 80% of the cases the request is found unjustified according to the criteria agreed with the global registry and IANA (see RFC1136). In these cases the NCC forwards the request to the appropriate local registry for assignment of class C network number(s). If a class B network number is justified, the NCC will allocate out of a small pool it keeps for this purpose and notifies any local registry involved.

During the reporting period the pool has been depleted down to 3 network numbers. The NCC has requested another 20 numbers from the Internet registry. To date this request has not been fulfilled with reference to RFC1366. RFC 1366 reads: 'The IANA and the IR will maintain sole responsibility for the Class B number space. Where there are designated regional registries, those registries will act in an auxiliary capacity in evaluating requests for Class B numbers.' When the RFC was discussed at the Paris RIPE meeting the expectation was that the definition of "sole responsibility" would not mean a change in actual procedures. Apparently now the procedures have changed and it is not clear what the actual procedures are, e.g. whether the RIPE NCC is being consulted by the global registry on all European B requests.

We feel that a four stage consultation process is not workable since there are too many problems and misunderstandings in the flow of information between requester, global registry, RIPE NCC and local registry. We therefore propose to continue working with the present procedures. In our opinion RFC1366 need not be changed for that. The formal responsibility should still be with IANA, however IANA should delegate that responsibility to the NCC for Europe just

as it delegates it to other registries for other parts of the world. In the meantime we have not changed our B allocation procedures working from the block of numbers currently reserved.

As mentioned in the last quarterly report some European organisations still have (sometimes quite large) blocks of class B numbers. The total extent of this is presently unknown as we do not know which European organisations hold such blocks. At the last meeting RIPE asked the NCC to try to recover as many as possible of such unused class B network numbers. In order to start this repeated requests were made to the Internet Registry for details of all European allocations of class B's. To date no information has been received. We will therefore publish a request to all European organisations holding such blocks to return them to the RIPE NCC.

Reverse Name Lookup for 193.x.y.0 Networks

On behalf of the local registries the NCC has proposed to the IR to delegate the DNS zone `193.in-addr.arpa` to the RIPE NCC. This would enable us to delegate subdomains corresponding to block allocations to the local registries. The advantage of this procedure would be that a local registry assigning a (block of) class C addresses could make reverse name lookup operational immediately without involvement of the IR. This decentralised procedure would be much quicker than the present one and prevent lots of user confusion, since the data will be maintained much closer to its source. The IR has reacted positively to this proposal but no concrete action has resulted during the reporting period.

Common Template

In the last quarterly report, the need for a common European registration template was identified. The aim of the common template is to simplify and streamline the handling of IP network number requests and allocations across Europe. By improving the quality of information received on each application, especially with regard to applications for class B network numbers, it is anticipated that the processing time for each application will decrease. During the reporting period the NCC with the help of local registries has drafted a template form and the accompanying documentation. This template will be discussed at the coming RIPE meeting.

NCC Workload and Performance

In order to quantify the workload generated at the NCC and to monitor the service quality, the NCC has kept a log of actions related to the delegated registry function. The statistics below relate to the period October - December. Direct comparisons cannot be made with the previous statistics reported in the last quarter (numbers in brackets) since the reporting period for these statistics covered mid August until the end of September.

The total number of applications received over the last quarter was 178 (172). Of these 97 (100) were received from the IR, 5 (13) were received from the local registries and 76 (59) were sent directly to the NCC. We have not logged most cases where we just passed on the address of the appropriate local registry without receiving an actual application. The most significant of these statistics concerns the number of applications now being sent directly to the NCC. This is a result of the information pointer referring to the NCC as the European Registry in the IR archives and other places. It also shows that a lot of information still circulating does not refer to the RIPE NCC.

The most frequently used method of applying for IP numbers is still paper (including faxes) accounting for over 50% of the total number of applications. Faxes account for 65% of the information sent out by the NCC. This reflects the fact that many organisations do not have e-mail connections. Applications from those organisations that do have e-mail connectivity comprise approximately 30%. Telephone applications account for 11% of the total again without counting simple referrals to local registries by telephone.

FAX software which enables NCC staff to send and file outgoing FAX messages from within their e-mail environment has now been installed. This has quite significantly reduced the overhead associated with replying to incoming faxes. This is evident in the statistics which show that 86% (63.4%) of all requests were answered (not only acknowledged) on the day they were received. 97.4% of all requests were processed within 7 days. Given that this figure includes dealing with class B requests, which often require further information to be sought from the applicant which is a time consuming process, the response times are very good. Achieving such excellent response times could not be achieved without the help of the local registries. Our thanks are extended to them for their work.

Address Space Usage

During the reporting period the NCC assigned 11 class B network numbers, delegated 39.5 blocks of class C network numbers and reserved 16.5 blocks of class C network numbers. The assignment and reservation of class C blocks was done in accordance with the CIDR scheme to allow route aggregation in the future. It should be noted that blocks are reserved based on usage estimates given by the local registries for a period of about 24 months. Should the assignment rate differ from the estimated one, reserved blocks can and will be used for other purposes if necessary.

During the reporting period the European registries have assigned a total of 6015 class C networks to bring the total of networks assigned from blocks delegated by the NCC to 7113.

The detailed status of the address space delegated to the RIPE NCC can be found in "Appendix B" on page 26 and "Appendix C" on page 27 for class B and class C network numbers respectively.

RIPE Network Management Database

Database Software

The database software has been released for use by local registries.

Unfortunately some minor extensions agreed at the last meeting have not been incorporated during the reporting period. They will be included during the next quarter. Fortunately no complaints have been received about this.

During the previous quarter the database support (update) software had been revised to add functionality and be more readily configurable. During the reporting period similar improvements for the database software itself have been studied. After some study, prototype software had been written in the PERL language showing the feasibility of functionality improvements.

Database Updates

The frequency of update runs remains at once per working day with an occasional run skipped and some days with multiple runs as demanded by the volume of updates received. This ensures that users perceive the database update process as predictable. During the reporting period the NCC has processed 14425 object updates, an average of 240 per working day. The number of updates received per month varies widely with peaks usually occurring just before RIPE meetings.

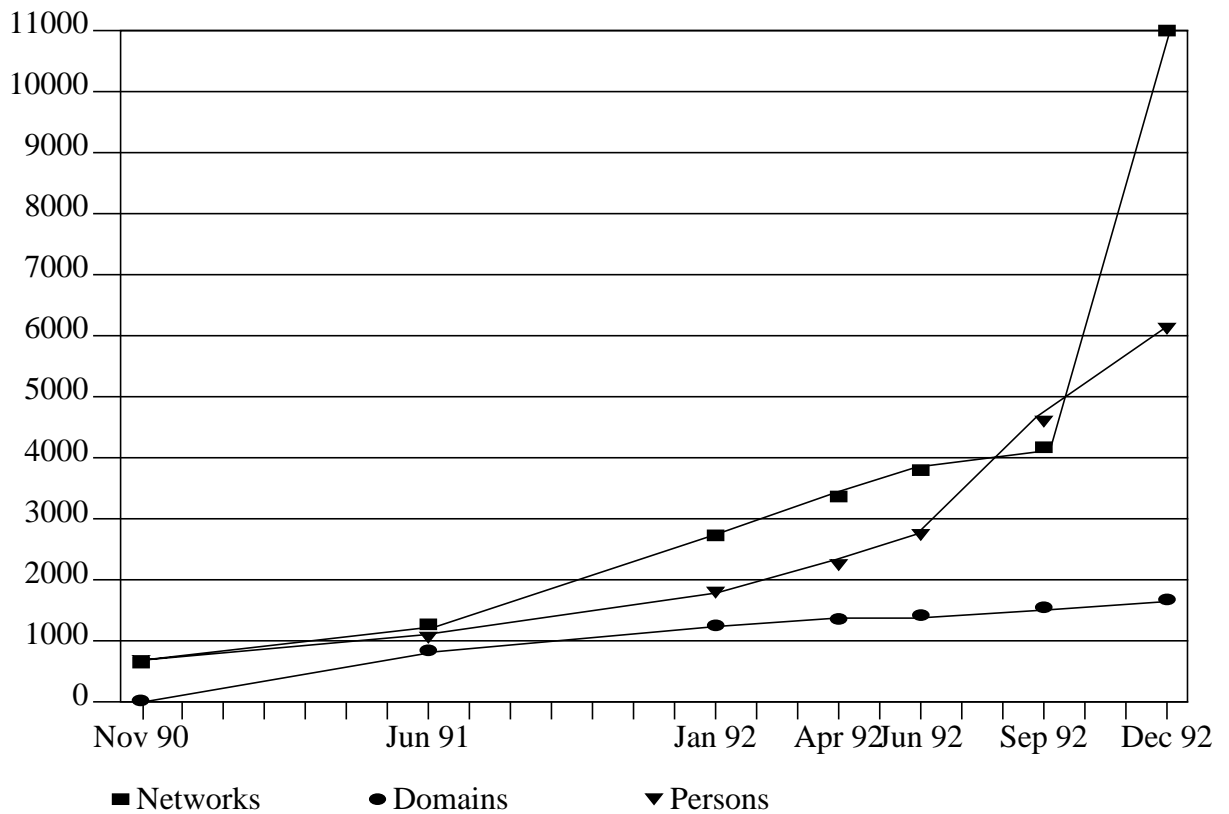
The updates consist of additions and changes as well as so called "NOOPs". NOOPs are updates received which do not differ from the information already recorded in the database. The NCC accepts such requests because it makes bulk updates from secondary NICs easier: secondary NICs can just send in their whole database without having to select just the records which changed since the last bulk update was sent to the NCC.

| Database Action | June 1992 (number) | June 1992 (perc) | Q3 1992 (number) | Q3 1992 (perc) | Q4 1992 (number) | Q4 1992 (perc) |
|-----------------|--------------------|------------------|------------------|----------------|------------------|----------------|
| Updated | 286 | 16% | 1372 | 8% | 9235 | 64% |
| Added | 483 | 27% | 2505 | 14% | 3632 | 11% |
| NOOP | 1005 | 57% | 13578 | 78% | 1558 | 25% |

Database Statistics

The number of networks in the database has increased significantly due to the large number of newly assigned class C network numbers.

RIPE Database Objects



| Month | Nets | Persons | Domains |
|--------|-------|---------|---------|
| Nov 90 | 643 | 670 | 0 |
| Jun 91 | 1270 | 1053 | 845 |
| Jan 92 | 2728 | 1792 | 1254 |
| Apr 92 | 3365 | 2242 | 1360 |
| Jun 92 | 3797 | 2736 | 1422 |
| Sep 92 | 4172 | 4594 | 1549 |
| Dec 92 | 11080 | 6116 | 1680 |

The database coverage has increased slightly but is still lower than it should be.

| Country | Nets in DNS | Nets in DB | Percentage Q2 | Percentage Q3 | Percentage Q4 |
|---------|-------------|------------|---------------|---------------|---------------|
| SI | 1 | 1 | - | - | 100.0 |
| BE | 9 | 9 | 100.0 | 100.0 | 100.0 |
| CS | 26 | 26 | 100.0 | 100.0 | 100.0 |
| HU | 8 | 8 | 100.0 | 100.0 | 100.0 |
| TN | 1 | 1 | 100.0 | 100.0 | 100.0 |
| YU | 4 | 2 | 100.0 | 100.0 | 50.0 |
| FR | 383 | 362 | 94.1 | 95.5 | 94.5 |
| ES | 24 | 23 | 91.7 | 88.9 | 95.8 |
| CH | 103 | 88 | 87.6 | 93.1 | 85.4 |
| IE | 22 | 19 | 87.5 | 90.9 | 86.4 |
| PL | 22 | 22 | 86.7 | 90.0 | 100.0 |
| PT | 51 | 44 | 85.0 | 80.0 | 86.3 |
| IT | 122 | 99 | 84.5 | 82.4 | 81.1 |
| NL | 110 | 95 | 82.9 | 80.9 | 86.4 |
| DE | 394 | 327 | 82.5 | 80.5 | 83.0 |
| GR | 12 | 9 | 78.6 | 66.7 | 75.0 |
| IS | 6 | 5 | 75.0 | 50.0 | 83.3 |
| IL | 25 | 19 | 73.9 | 71.4 | 76.0 |
| UK | 280 | 198 | 67.3 | 67.8 | 70.7 |
| AT | 76 | 63 | 67.2 | 63.8 | 82.9 |
| SE | 174 | 104 | 57.8 | 49.3 | 59.8 |
| NO | 54 | 38 | 56.9 | 58.5 | 70.4 |
| DK | 28 | 11 | 45.0 | 40.0 | 39.3 |
| LU | 5 | 3 | 33.3 | 50.0 | 60.0 |
| FI | 196 | 77 | 8.8 | 6.9 | 39.3 |

Worldwide Database Coordination

The NCC has developed software to generate and accept the recently agreed registry database exchange format. During the reporting period there was little progress while we are waiting for the other registries to be ready for test exchanges.

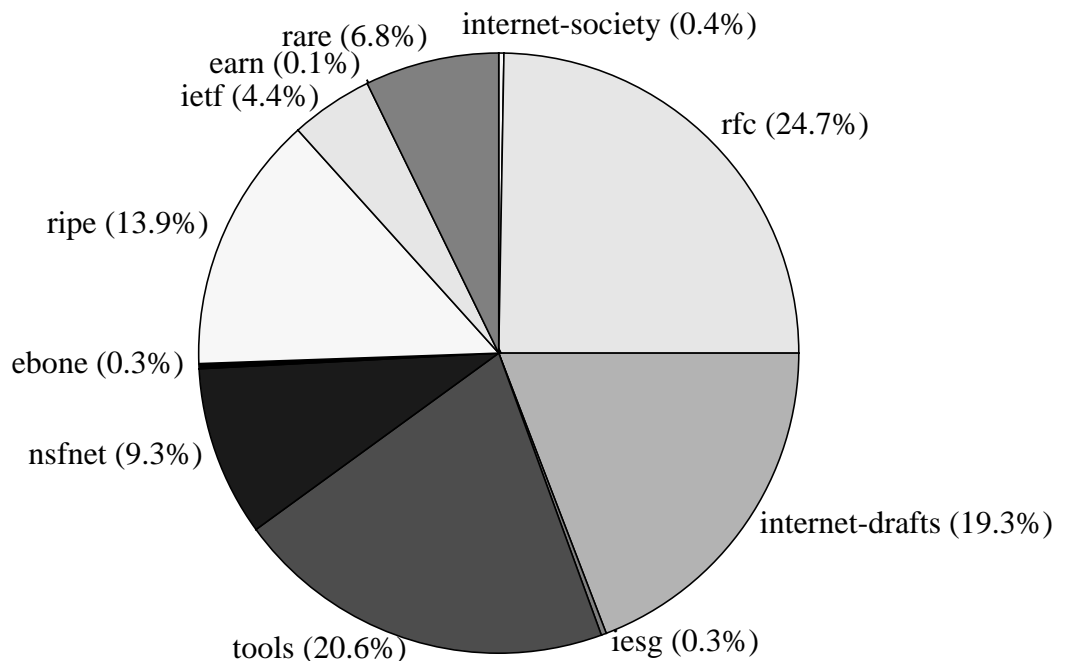
Routing Information

A separate update procedure for routing information has been designed and implemented. This procedure will be used by routing 'guardians' to control network membership to routing related groups of networks.

The RIPE NCC has also helped to start refining the representation of routing information in the database in order to make it better understandable and better meet the current environment. In this context a project has been defined which will make use of the routing information stored in the database to provide routing service for European networks to the Global Internet Exchange (GIX).

Document Store

Documents in Archive (175 Mbytes)



The document store is maintained as a reference point for information that will be useful to network service providers, NICs, NOCs alike. The documents stored relate to a wide variety of networking topics. For example, information can be obtained about the activities EBONE, the Internet Engineering Task Force (IETF) and the Internet Engineering Steering Group (IESG), RARE, and not least, documents relating to RIPE itself. In addition the document store con-

tains information relating to Internet drafts and RFC's. In addition the EARN newsletter is now available in subdirectory EARN. All four editions of the newsletter (from 1992) are available.

In total the document store contains approximately 2100 documents. By volume, it accounts for over 175 Mbytes. A breakdown of the composition of the document store is shown below

| Area | Files | KBytes |
|------------------|-------|--------|
| rfc | 618 | 41772 |
| tools | 183 | 39006 |
| internet-drafts | 565 | 33418 |
| nsfnet | 119 | 15788 |
| ripe | 326 | 23505 |
| rare | 209 | 11419 |
| ietf | 756 | 7475 |
| iesg | 46 | 467 |
| ebone | 29 | 491 |
| internet-society | 19 | 665 |
| earn | 5 | 167 |

Revision of the RIPE archives

As reported in the last quarterly report, the RIPE archives in the document store have been substantially revised in both structure and format. All RIPE documents are now located in a `ripe/docs/` directory, which is further divided into the following subdirectories:

```

ripe-agenda/
ripe-current/
ripe-docs/
ripe-drafts/
ripe-minutes/

```

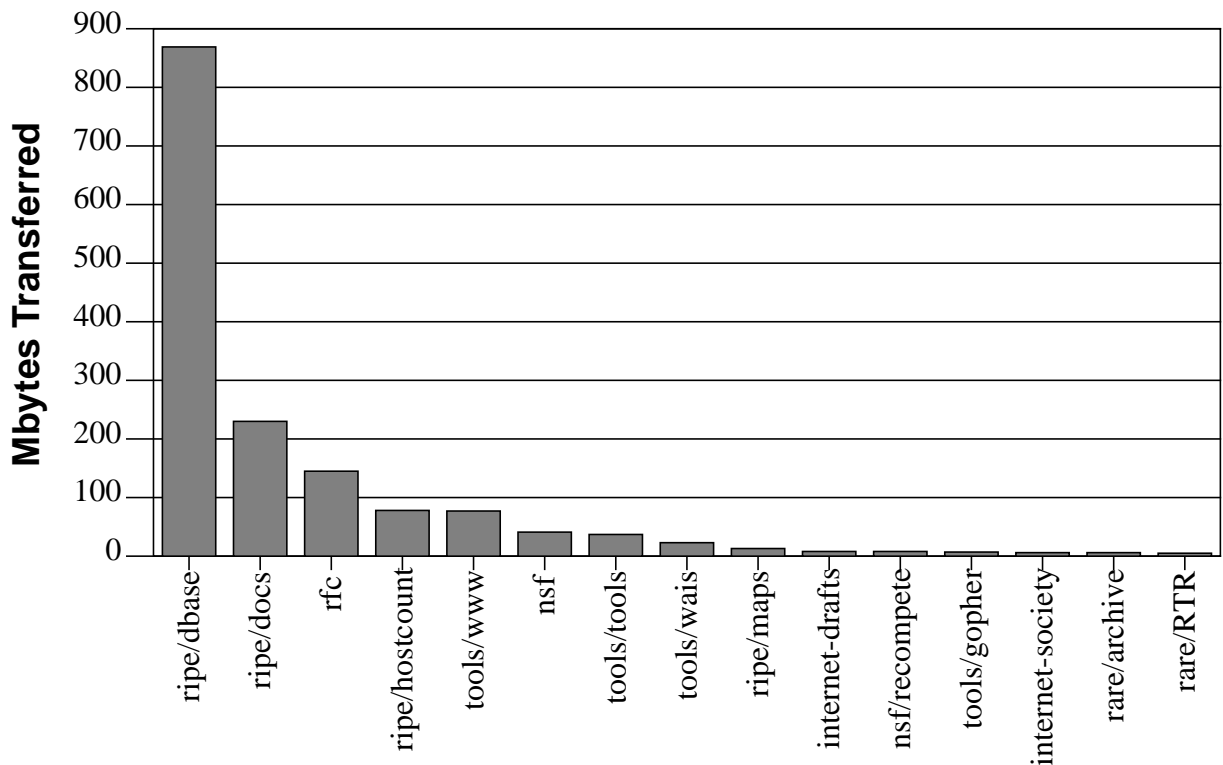
Accessing the Document Store

The NCC document store can be accessed through a variety of methods. Besides methods of access as previously reported, (via anonymous ftp to `ftp.ripe.net` and by using GOPHER and WAIS clients to `gopher.ripe.net` or `wais.ripe.net` respectively and through the NCC Interactive Information Server) the document store can now be accessed via pilot World Wide Web (WWW). WWW is a method of presenting information based on

the user making choices of key words (indicated with a number in brackets at the side of the word) which on selection “expand” to give a deeper level of information relating to that word. WWW is currently at the pilot stage.

FTP Usage Statistics

Most Popular Archive Sections Q4 1992



The most popular archive sections of the RIPE document store are tabulated below. This displays the top 15 most popular sections which were accessed using ftp. The most popular section is the ripe database, with approximately 870 Mbytes transferred:

| Archive Section | Files Sent | Bytes Sent | % of files sent | % of bytes sent |
|-----------------|------------|------------|-----------------|-----------------|
| ripe/dbase | 991 | 869400847 | 11.05 | 54.45 |
| ripe/docs | 2133 | 230213789 | 23.79 | 14.42 |
| rfc | 1787 | 145185345 | 19.93 | 9.09 |
| ripe/hostcount | 714 | 77633923 | 7.96 | 4.86 |
| tools/www | 297 | 76948856 | 3.31 | 4.82 |
| nsf | 400 | 41090123 | 4.46 | 2.57 |
| tools/conf | 91 | 36996454 | 1.01 | 2.32 |

| Archive Section | Files Sent | Bytes Sent | % of files sent | % of bytes sent |
|------------------|------------|------------|-----------------|-----------------|
| tools/wais | 140 | 23403957 | 1.56 | 1.47 |
| ripe/maps | 185 | 13464608 | 2.06 | 0.84 |
| internet-drafts | 122 | 8453373 | 1.36 | 0.53 |
| nsf/recompete | 55 | 8185394 | 0.61 | 0.51 |
| tools/gopher | 99 | 7288116 | 1.10 | 0.46 |
| internet-society | 80 | 6687213 | 0.89 | 0.42 |
| rare/archive | 240 | 6191833 | 2.68 | 0.39 |
| rare/RTR | 24 | 5170989 | 0.27 | 0.32 |

The number of Mbytes transferred using ftp per top level domain is shown below:

| Domain Name | Number of Files Sent | Number of Bytes Sent | % of files sent | % of bytes sent |
|-------------|----------------------|----------------------|-----------------|-----------------|
| IIS | 0 | 0 | 0 | 0 |
| IXI | 0 | 0 | 0 | 0 |
| LOCAL | 0 | 0 | 0 | 0 |
| NCC-X25 | 0 | 0 | 0 | 0 |
| PSPDN | 0 | 0 | 0 | 0 |
| UNKNOWN | 503 | 51204567 | 5.61 | 3.21 |
| at | 99 | 9180269 | 1.10 | 0.57 |
| au | 12 | 900048 | 0.13 | 0.06 |
| be | 83 | 14129626 | 0.93 | 0.88 |
| br | 5 | 934156 | 0.06 | 0.06 |
| ca | 38 | 2385199 | 0.42 | 0.15 |
| ch | 503 | 144382113 | 5.61 | 9.04 |
| cl | 1 | 1970 | 0.01 | 0.00 |
| com | 489 | 124706428 | 5.45 | 7.81 |
| cs | 107 | 4604605 | 1.19 | 0.29 |
| de | 906 | 87395617 | 10.10 | 5.47 |
| dk | 61 | 9234800 | 0.68 | 0.58 |
| edu | 543 | 121280238 | 6.06 | 7.60 |
| ee | 0 | 0 | 0 | 0 |
| es | 169 | 8976533 | 1.88 | 0.56 |
| fi | 958 | 292153550 | 1 | 10.68 |
| fr | 174 | 39248067 | 1.94 | 2.46 |
| gov | 52 | 11432336 | 0.58 | 0.72 |

| Domain Name | Number of Files Sent | Number of Bytes Sent | % of files sent | % of bytes sent |
|-------------|----------------------|----------------------|-----------------|-----------------|
| gr | 573 | 78543493 | 6.39 | 4.92 |
| hk | 0 | 0 | 0 | 0 |
| hu | 85 | 4844867 | 0.95 | 0.30 |
| ie | 65 | 6104140 | 0.72 | 0.38 |
| il | 16 | 3507391 | 0.18 | 0.22 |
| in | 15 | 706370 | 0.17 | 0.04 |
| is | 6 | 802145 | 0.07 | 0.05 |
| it | 507 | 67243159 | 5.65 | 4.21 |
| jp | 0 | 0 | 0 | 0 |
| kr | 0 | 0 | 0 | 0 |
| lu | 7 | 1943250 | 0.08 | 0.12 |
| mil | 52 | 4559751 | 0.58 | 0.29 |
| mx | 0 | 0 | 0 | 0 |
| net | 928 | 280696668 | 10.35 | 17.58 |
| nl | 408 | 77324692 | 4.55 | 4.84 |
| no | 39 | 14880150 | 0.43 | 0.93 |
| nz | 0 | 0 | 0 | 0 |
| org | 28 | 4594701 | 0.31 | 0.29 |
| pl | 283 | 16785025 | 3.16 | 1.05 |
| pt | 954 | 92687125 | 10.64 | 5.80 |
| se | 185 | 9761543 | 2.06 | 0.61 |
| sg | 1 | 47975 | 0.01 | 0.00 |
| su | 0 | 0 | 0 | 0 |
| tw | 5 | 191270 | 0.06 | 0.01 |
| uk | 87 | 8169431 | 0.97 | 0.51 |
| us | 1 | 134 | 0.01 | 0.00 |
| yu | 14 | 1137922 | 0.16 | 0.07 |
| za | 4 | 92910 | 0.04 | 0.01 |

The UNKNOWN category refers to where there is no match found between the IP address and the Domain Name.

Interactive Information Server

Once again the NCC would like to stress the idea behind the Interactive Information Server (IIS) and to encourage its usage. Therefore we make no apologies for repeating the information (although abbreviated) in this paragraph.

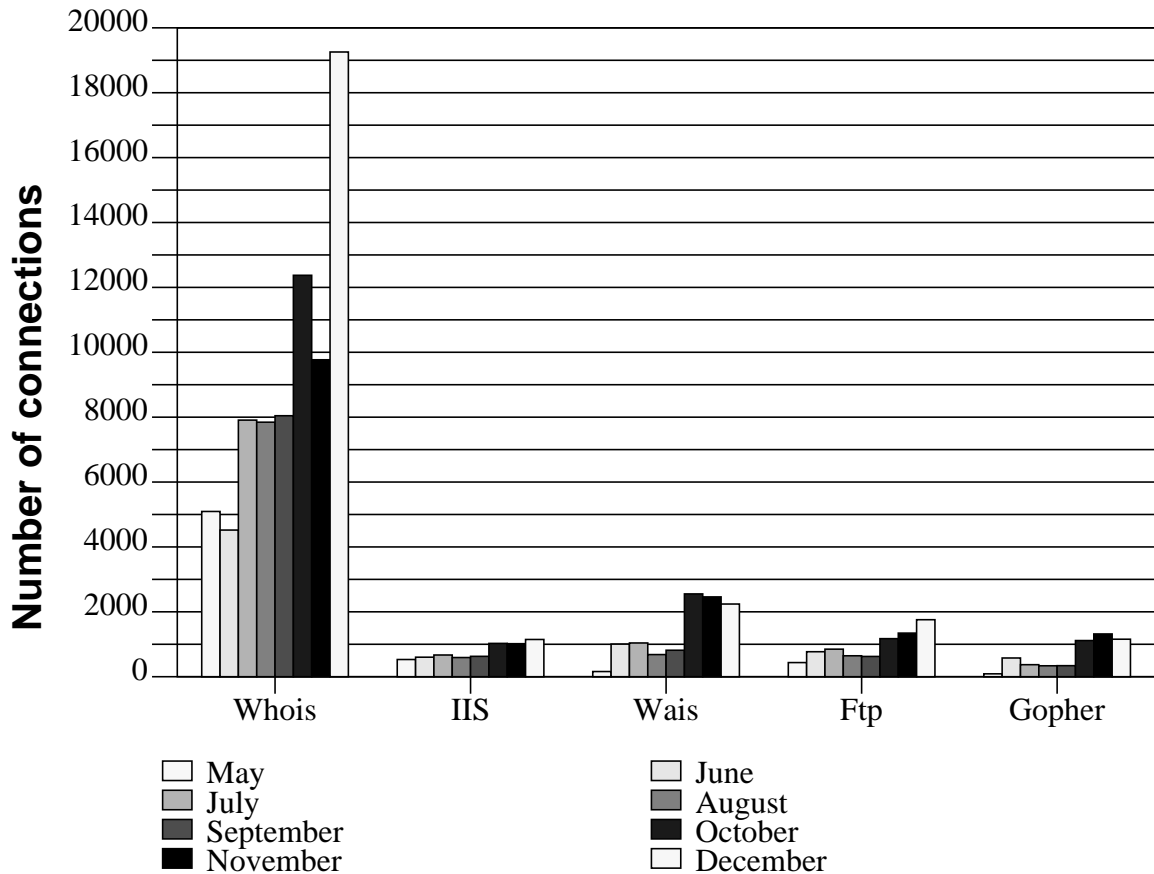
The goal of the IIS is to enable users with minimal hardware and/or software support to access information stored by the NCC. The IIS is also the most convenient method to access the RIPE document store from networks which are not IP based. At the same time it caters for those occasional users who do not choose to run or learn the local WAIS, GOPHER etc. clients. It is possible to access the information in the document store using both `telnet` and `pad` connections. In addition the server provides an interface to a number of clients enabling a wide range of information to be accessed in a number of different ways. Currently these comprise WAIS, Gopher and WHOIS. For details on how to use the IIS, please refer to our information leaflet "Interactive Information Server" or see the first edition of the NCC Quarterly Reports.

General Service Usage Statistics

Statistics for the use of the various NCC information services were collected for the fourth quarter of 1992. The table below shows the total number of connections made for each service (Whois, IIS, Wais, Ftp and Gopher) contacted either directly from a user client or from the NCC Interactive Information Service. The breakdown is given as total number of connections per month:

| Service | Jul | Aug | Sep | Oct | Nov | Dec |
|---------|------|------|------|-------|------|-------|
| Whois | 7909 | 7845 | 8044 | 12373 | 9769 | 19255 |
| IIS | 669 | 591 | 628 | 1027 | 1018 | 1148 |
| Wais | 1040 | 682 | 816 | 2552 | 2460 | 2240 |
| FTP | 849 | 645 | 625 | 1173 | 1344 | 1757 |
| Gopher | 371 | 337 | 340 | 1115 | 1318 | 1156 |

NCC Services Usage Q2/Q3/Q4 1992



For technical reasons, GOPHER logging does not appear in this overview, since the logging is done in very different manner than all other services. The number of connections to the various servers at the NCC broken down by the source of the request is shown in the table below.

| Source | Whois | IIS | Wais | Ftp | Total |
|---------|-------|-----|------|-----|-------|
| IIS | 3709 | 0 | 3296 | 0 | 7005 |
| IXI | 9 | 569 | 0 | 0 | 578 |
| LOCAL | 727 | 78 | 53 | 177 | 1035 |
| NCC-X25 | 11 | 41 | 0 | 0 | 52 |
| PSPDN | 1 | 1 | 0 | 0 | 2 |
| UNKNOWN | 521 | 337 | 94 | 228 | 1180 |
| at | 263 | 65 | 62 | 38 | 428 |
| au | 15 | 6 | 24 | 6 | 51 |
| be | 207 | 18 | 0 | 43 | 268 |

| Source | Whois | IIS | Wais | Ftp | Total |
|--------|-------|-----|------|-----|-------|
| br | 1 | 2 | 0 | 7 | 10 |
| ca | 50 | 36 | 9 | 45 | 140 |
| ch | 674 | 45 | 15 | 216 | 950 |
| cl | 6 | 0 | 1 | 0 | 7 |
| com | 56 | 32 | 444 | 380 | 912 |
| cs | 81 | 54 | 0 | 20 | 155 |
| de | 761 | 65 | 7 | 257 | 1090 |
| dk | 89 | 4 | 10 | 21 | 124 |
| edu | 5529 | 162 | 501 | 432 | 6624 |
| ee | 0 | 3 | 0 | 0 | 3 |
| es | 32 | 4 | 1 | 12 | 49 |
| fi | 142 | 11 | 14 | 111 | 278 |
| fr | 853 | 104 | 15 | 86 | 1058 |
| gov | 31 | 6 | 16 | 14 | 67 |
| gr | 66 | 3 | 0 | 55 | 124 |
| hk | 0 | 0 | 0 | 1 | 1 |
| hu | 127 | 33 | 0 | 13 | 173 |
| ie | 193 | 33 | 0 | 26 | 252 |
| il | 8 | 13 | 0 | 10 | 31 |
| in | 0 | 2 | 0 | 1 | 3 |
| is | 40 | 0 | 6 | 3 | 49 |
| it | 347 | 38 | 1 | 107 | 493 |
| jp | 8 | 1 | 10 | 1 | 20 |
| kr | 1 | 4 | 0 | 0 | 5 |
| lu | 14 | 27 | 0 | 5 | 46 |
| mil | 20 | 41 | 6 | 23 | 90 |
| mx | 0 | 0 | 0 | 1 | 1 |
| net | 1299 | 25 | 32 | 172 | 1528 |
| nl | 1463 | 138 | 28 | 254 | 1883 |
| no | 1943 | 4 | 0 | 8 | 1955 |
| nz | 1 | 0 | 0 | 0 | 1 |
| org | 2182 | 8 | 5 | 16 | 2211 |
| pl | 55 | 17 | 0 | 36 | 108 |
| pt | 207 | 10 | 11 | 25 | 253 |
| se | 760 | 29 | 3 | 22 | 814 |
| sg | 9 | 0 | 2 | 0 | 11 |
| su | 0 | 3 | 0 | 0 | 3 |

| Source | Whois | IIS | Wais | Ftp | Total |
|--------|-------|------|------|------|-------|
| tw | 4 | 4 | 0 | 5 | 13 |
| uk | 444 | 83 | 124 | 43 | 694 |
| us | 8659 | 1 | 2 | 1 | 8663 |
| yu | 10 | 15 | 0 | 8 | 33 |
| za | 0 | 0 | 0 | 1 | 1 |
| Total | 31628 | 2175 | 4792 | 2930 | 41525 |

In total there were 2175 connections to the Interactive Information Server, which is queried, on average, 35 times per working day.

The provisional access from the IXI network has been used 569 times during the reporting period, slightly less than 10 times per working day on average. This service will have to be discontinued once the IXI connection at NIKHEF which it uses is disconnected unless alternative access can be found.

RIPE NCC Information Leaflets

Information leaflets describing the RIPE Network Management Database and the Interactive Information Server were printed last quarter. Copies of these leaflets are still available. Postscript versions of the leaflets can be obtained from the RIPE document store (documents `ripe-77` and `ripe-78`). Alternatively we are more than happy to supply hard copies of the leaflets.

Presentations

Once again the NCC would like to stress that it considers it a priority to clarify both the existence and the role of the NCC in relation to the multitude of networking organisations. Clearly the larger the audience, the easier this task is. To this end the NCC will give presentations about its activities wherever appropriate and possible. Therefore we encourage all those organisations wishing to convey the work of the RIPE NCC to others to contact the NCC with a request for a presentation.

Presentations about RIPE and the RIPE NCC have been given at a meeting of the German Internet Forum DIGI in Munich, Germany in November.

ACONET has contacted the NCC with a request for a presentation, which is to be given at The 4th Network Seminar and Intensive Course for Scientists and Network Managers from Central Europe by Marten Terpstra on February 22nd/23rd.

RIPE Support Activities

RIPE meetings

Currently RIPE meetings take place three times a year. From its initiation on April 1st 1992, the RIPE NCC was chartered to provide support to all RIPE meetings.

The meetings are open to all Internet service providers, and enable both formal and informal information gathering, the exchange of ideas and debate. In addition it is at RIPE meetings where the members of the 9 RIPE working groups can meet face to face to discuss and progress their work.

The NCC welcomes suggestions for support from participants for future RIPE meetings

RIPE meetings - support

A detailed checklist describing the preparation necessary to host a RIPE meeting has been drawn up. In this way it is hoped that it will give potential hosting organisations as well as the RIPE NCC a clear idea of what is involved in hosting a RIPE meeting away from home. It should be mentioned here that the number of participants to successive RIPE meetings continues to increase significantly at each meeting, enhancing the size of the venue and level of support required.

In addition to the checklist, RIPE meeting site visits have been initiated for all future RIPE meetings scheduled outside Amsterdam. This gives the NCC an opportunity to meet the local organisers, see the proposed venue and generally walk through the checklist. A site visit was carried out in December to meet the organisers of the Prague RIPE meeting at the Czech Technical University.

New Working Group

At the 12th RIPE meeting held in Paris, a new working group, local-ir (local internet registries) was established. The aim of this new group is to promote discussion to achieve greater coordination and cohesion between local registries on issues relating to the allocation of IP numbers. The current chairman of the group is Daniel Karrenberg

Referrals and End-User Enquiries

Again the number of referral requests and end-user enquiries has not been significant during the reporting period. Most queries have been related to either requests for IP numbers or dealt with by the mailing list for IP Providers. See the previous quarterly report for details of this list.

General Set Up

The general server and each of the personal workstations used by the NCC staff have benefited from addition of 16MB of memory.

The NCC library has expanded thanks to the kind donation by NLnet (Dutch part of EUnet) of recently published books by O'Reilly Associates, Inc.

We also would like to thank NetCS of Berlin for their kind donation of FAX software for the NCC Sun workstations.

Acknowledgements

The RIPE NCC wishes to thank the RARE Secretariat for their excellent support throughout this quarter.

We wish also to thank the local registries for their excellent work, especially with regard to the allocation of IP numbers

Appendix A

Meetings Attended

The following meetings were attended by staff during the second quarter of the RIPE NCC operations.

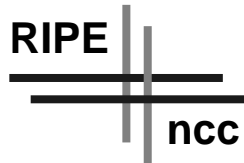
| Date | Name & Location | Attendee |
|-----------|-------------------------------------|--------------------------------------|
| Nov 10-12 | DIGI Munich | Marten Terpstra Daniel Karrenberg |
| Nov 16-20 | IETF Washington, USA | Marten Terpstra Daniel Karrenberg |
| Dec 17 | Czech Technical Univ, Prague, CS | Anne Lord |

Appendix B

Class B Network Number Allocations to Date

The table below summarises all assignments of class B network numbers made through the RIPE NCC to date. The "Via" column indicates through which registry the NCC received the request and solicited the necessary justification.

| Network Number | Via |
|-----------------|----------|
| 160.44-160.52 | DE-NIC |
| 160.53 | SWITCH |
| 160.54-160.58 | DE-NIC |
| 160.59 | SWITCH |
| 160.60 | DE-NIC |
| 160.61-160.62 | CH NIC |
| 160.63 | SWITCH |
| 163.156-163.157 | RIPE NCC |
| 163.158 | CH NIC |
| 163.159-163.160 | RIPE NCC |
| 163.161 | SWITCH |
| 163.162 | GARR |
| 163.163-163.165 | RIPE NCC |
| 163.166 | ICNET |
| 163.167 | JANET |
| 163.168-163.175 | RIPE NCC |
| 164.1 | RIPE NCC |
| 164.2 | RIPE NCC |
| 164.3 | EUnet/AT |
| 164.4 | SE NIC |
| 164.5 | RIPE NCC |
| 164.6 | PIPEX |
| 164.7 | RIPE NCC |
| 164.8 | ARNES |
| 164.9 | SE NIC |
| 164.10 | SE NIC |
| 164.11 | JANET |
| 164.12 | RIPE NCC |



| Network Number | Via |
|----------------|--------------------|
| 164.13 | Telecom Finland |
| 164.14 | RIPE NCC |
| 164.15 | RIPE NCC |
| 164.16-164.34 | DE-NIC |
| 164.35 | RIPE NCC |
| 164.36 | RIPE NCC |
| 164.37-164.40 | free |

Appendix C

Class C Block Allocations to Date

The table below summarises the delegation status of the class C network number blocks allocated through the NCC and the number of networks allocated from these blocks. The “p/n” column indicates whether the block in question is delegated to the local registry of a service provider or is used to allocate numbers to organisations without a service provider.

It should be noted that blocks are reserved based on usage estimates given by the local registries for a period of about 24 months. Should the assignment rate differ from the estimated one, reserved blocks can and will be used for other purposes if necessary.

| Block | p / n | nets assigned | Country | Registry |
|-----------|-------|---------------|---------|-----------------------------|
| 192.162 | ? | 26 | NCC | Miscellaneous TN,RO,PT |
| 192.164 | p | 238 | AT | EUnet/AT |
| 192.165 | ? | 192 | SE | NORDUnet |
| 192.166 | ? | 176 | DE | DE-NIC |
| 192.167 | ? | 154 | IT | GARR |
| 192.168 | p | 0 | EU | EUnet/NOC |
| 193.0 | ? | free | none | NCC |
| 193.1 | p | 7 | IE | HEANET |
| 193.2 | p | 13 | YU | ARNES |
| 193.3 | ? | 84 | DK | EUnet/DK |
| 193.4 | ? | 17 | IS | Iceland everything |
| 193.5 | p | 42 | CH | SWITCH |
| 193.6 | p | 149 | HU | Sztaki |
| 193.7 | p | 0 | DE | chambers of commerce DE-NIC |
| 193.8 | n | 20 | CH | non-provider CH-NIC |
| 193.9 | n | 160 | EU | NCC non-provider European |
| 193.10 | p | 17 | SE | SUNET |
| 193.11 | p | resvd | SE | SUNET |
| 193.12 | p | 81 | SE | SWIPNET |
| 193.13-15 | p | resvd | SE | SWIPNET |
| 193.16 | n | 150 | DE | non-provider DE-NIC |
| 193.17 | n | 90 | DE | non-provider DE-NIC |

| Block | p / n | nets assigned | Country | Registry |
|-----------|-------------|------------------|---------|----------------------------------|
| 193.18 | n | 254 | DE | non-provider DE-NIC |
| 193.19 | n | 0 | DE | non-provider DE-NIC |
| 193.20 | n | 256 | DE | non-provider DE-NIC |
| 193.21 | n | 0 | DE | non-provider DE-NIC |
| 193.22 | n | 165 | DE | non-provider DE-NIC |
| 193.23 | n | 120 | DE | non-provider DE-NIC |
| 193.24-31 | n | resvd | DE | non-provider DE-NIC |
| 193.32 | p | 214 | UK | non-provider UK-NIC |
| 193.33-34 | n | resvd | UK | Sainsbury's (multiple B request) |
| 193.35-39 | n | 210 | UK | non-provider UK NIC |
| 193.40 | n | 3 | EE | NCC non-provider EE |
| 193.41 | n | resvd | EE | non provider EE |
| 193.42 | n | 86 | IT | non provider IT NIC |
| 193.43 | n | resvd | IT | non provider IT NIC |
| 193.44 | p | 21 | SE | TIPNET |
| 193.45-47 | p | resvd | SE | TIPNET |
| 193.48 | p | 143 | FR | RENATER |
| 193.49 | p | 79 | FR | RENATER |
| 193.50 | p | 120 | FR | RENATER |
| 193.51-52 | p | resvd | FR | RENATER |
| 193.53 | n | 55 | BE | NCC non-provider (dup) |
| 193.54-55 | ? | free | none | NCC |
| 193.56 | n | 1 | FR | non-provider FR NIC |
| 193.57 | n | resvd | FR | non-provider FR NIC |
| 193.58 | n | 5 | BE | NCC non-provider |
| 193.59 | p | 17 | PL | academic |
| 193.60 | p | 137 | UK | JANET |
| 193.61 | p | 13 | UK | JANET |
| 193.62 | p | 0 | UK | JANET |
| 193.63 | p | 18 | UK | JANET |
| 193.64 | p | 23 | FI | EUnet/FI |
| 193.65-67 | p | resvd | FI | EUnet/FI |
| 193.68 | p | 0 | BG | EUnet/BG |
| 193.69 | p | resvd | IS | EUnet/IS |
| 193.70 | p | resvd | IT | EUnet/IT |

| Block | p / n | nets assigned | Country | Registry |
|-------------|-------------|------------------|---------|--------------------|
| 193.71 | p | 0 | NO | EUnet/NO |
| 193.72 | p | 18 | CH | EUnet/CH |
| 193.73 | p | resvd | CH | EUnet/CH |
| 193.74 | p | 5 | BE | EUnet/BE |
| 193.75 | p | resvd | BE | EUnet/BE |
| 193.76-77 | p | resvd | HR | EUnet/HR |
| 193.78 | p | 30 | NL | EUnet/NL |
| 193.79 | p | resvd | NL | EUnet/NL |
| 193.80 | p | 21 | AT | EUnet/AT |
| 193.81-83 | p | resvd | AT | EUnet/AT |
| 193.84 | p | 86 | CS | EUnet/CS |
| 193.85-86 | p | resvd | CS | EUnet/CS |
| 193.87 | p | 24 | CS | EUnet/CS for SANET |
| 193.88 | p | 28 | DK | EUnet/DK |
| 193.89-91 | p | resvd | DK | EUnet/DK |
| 193.92 | p | 11 | GR | EUnet/GR |
| 193.93 | p | resvd | GR | EUnet/GR |
| 193.94 | p | 5 | TN | NCC EUnet/TN |
| 193.95 | p | resvd | TN | EUnet/TN |
| 193.96 | p | 124 | DE | EUnet/DE |
| 193.97 | p | 127 | DE | EUnet/DE |
| 193.98 | p | 0 | DE | EUnet/DE |
| 193.99-103 | p | resvd | DE | EUnet/DE |
| 193.104 | p | 11 | FR | EUnet/FR |
| 193.105-111 | p | resvd | FR | EUnet/FR |
| 193.112 | p | 28 | UK | EUnet/UK |
| 193.113 | p | 67 | UK | EUnet/UK (special) |
| 193.114-119 | p | resvd | UK | EUnet/UK |
| 193.120 | p | 17 | IE | EUnet/IE |
| 193.121-123 | p | resvd | IE | EUnet/IE |
| 193.124 | p | 42 | RU | EUnet/RU + xSU |
| 193.125 | p | resvd | RU | EUnet/RU + xSU |
| 193.126 | p | 32 | PT | EUnet/PT |
| 193.127 | p | 0 | ES | EUnet/ES |
| 193.128 | p | 69 | UK | PIPEX |

| Block | p / n | nets assigned | Country | Registry |
|-------------|-------------|------------------|---------|-----------------------------|
| 193.129-135 | p | resvd | UK | PIPEX |
| 193.136 | p | 35 | PT | RCCN |
| 193.137 | p | resvd | PT | RCCN |
| 193.138 | ? | 5 | SI | NCC general |
| 193.139 | p | 254 | FR | Individual Block allocation |
| 193.140 | ? | 14 | TR | NCC general |
| 193.141 | p | 0 | DE | XLINK + reserved |
| 193.142 | n | 64 | FI | NCC non-provider |
| 193.143 | n | 0 | FI | NCC non-provider |
| 193.144 | p | 10 | ES | RedIRIS |
| 193.145-147 | p | resvd | ES | RedIRIS |
| 193.148 | n | 11 | ES | non-provider ES NIC |
| 193.149-155 | n | resvd | ES | non-provider ES NIC |
| 193.156 | p | 43 | NO | UNINETT |
| 193.157-159 | p | resvd | NO | UNINETT |
| 193.160 | n | 68 | NO | non-provider NO NIC |
| 193.161 | n | resvd | NO | non-provider NO NIC |
| 193.162 | n | 21 | DK | non-provider DK NIC |
| 193.163 | n | resvd | DK | non-provider DK NIC |
| 193.164 | n | 3 | PL | NCC non-provider |
| 193.165 | n | resvd | PL | non-provider |
| 193.166 | p | 6 | FI | FUNET |
| 193.167 | p | resvd | FI | FUNET |
| 193.168 | n | 41 | LU | NCC non provider |
| 193.169 | p | 0 | UK | AT&T Istel |
| 193.170 | p | 26 | AT | NCC ACONET |
| 193.171 | p | resvd | AT | ACONET |
| 193.172 | p | 4 | EU | NCC EMPB |
| 193.173 | p | resvd | EU | EMPB |
| 193.174 | p | 0 | DE | DFN |
| 193.175 | p | resvd | DE | DFN |
| 193.176 | n | 17 | NL | non provider NL NIC |
| 193.177 | n | resvd | NL | non provider NL NIC |
| 193.178 | n | 30 | IE | NCC non provider IE |
| 193.179 | n | resvd | IE | non provider IE |

| Block | p / n | nets assigned | Country | Registry |
|-------------|-------------|------------------|---------|---------------------------------|
| 193.180 | n | 113 | SE | non provider SE NIC |
| 193.181-183 | n | resvd | SE | non provider SE NIC |
| 193.184 | p | 0 | FI | Helsinki Telephone Company |
| 193.185 | p | resvd | FI | Helsinki Telephone Company |
| 193.186 | n | 30 | AT | non provider AT NIC |
| 193.187 | n | resvd | AT | non provider AT NIC |
| 193.188 | n | 3 | several | NCC Middle East |
| 193.189 | n | 64 | NG | NCC Nigeria |
| 193.190 | p | 0 | BE | Belgian National Research Net |
| 193.191 | p | resvd | BE | Belgian National Research Net |
| 193.192-243 | ? | free | none | NCC |
| 193.244 | p | 255 | BE | Kredietbank |
| 193.245 | p | 255 | BE | Kredietbank |
| 193.246-247 | p | resvd | BE | Kredietbank |
| 193.248-254 | p | 1530 | FR | France Telecom Internal Network |
| 193.255 | ? | free | none | NCC |

Appendix D

Domain Table

This appendix gives an overview of all top level domains, and other categories mentioned in the tables and graphs.

| Domain | Specifying |
|---------|--|
| IXI | IXI |
| IIS | the Interactive Information Server |
| LOCAL | the NCC itself using IP |
| NCC-X25 | the NCC itself using X.25 |
| PSPDN | the Public Data Network |
| UNKNOWN | no mapping between IP address and domain name could be found |
| com | commercial organisations (mainly in the US) |
| edu | educational organisations (mainly in the US) |
| gov | US government organisations |
| mil | US military organisations |
| net | network providers and related organisations |
| org | organisations (mainly in the US) |
| al | Albania |
| at | Austria |
| au | Australia |
| be | Belgium |
| br | Brazil |
| bg | Bulgaria |
| by | Byelorussia |
| ca | Canada |
| ch | Switzerland |
| cl | Chile |
| cs | Czechoslovakia |
| de | Germany |
| dk | Denmark |
| dz | Algeria |
| ee | Estonia |

| Domain | Specifying |
|--------|--------------------|
| es | Spain |
| fi | Finland |
| fr | France |
| gb | Great-Britain |
| gr | Greece |
| hk | Hong Kong |
| hr | Croatia |
| hu | Hungary |
| ie | Ireland |
| in | India |
| is | Iceland |
| it | Italy |
| il | Israel |
| jp | Japan |
| kr | Korea |
| lt | Lithuania |
| lu | Luxembourg |
| lv | Latvia |
| mx | Mexico |
| nl | Netherlands |
| no | Norway |
| nz | New Zealand |
| pl | Poland |
| pt | Portugal |
| ro | Romania |
| se | Sweden |
| sg | Singapore |
| si | Slovenia |
| su | USSR |
| tn | Tunesia |
| tw | Taiwan |
| ua | Ukraine |
| uk | United Kingdom |
| us | United States |
| va | Vatican City State |
| yu | Yugoslavia |
| za | South Africa |

Appendix F

Working Group Mailing Lists

Coordinating and support for the activities of the Working Groups is a key focus for the RIPE NCC. During the first quarter, the NCC has created mailing lists for those working groups that have requested this facility.

Relationship between Academic & Research Networks & Commercial Networks.

Chair: Glenn Kowack. E-mail: glenn@eu.net.

Working Group E-mail: raec-wg@ripe.net.

Network Information Discovery and User Support.

Chair: Nandor Horvath. E-mail: horvath@sztaki.hu

Working Group E-mail: nidus-wg@ripe.net

DNS Issues

Chair: Francis Dupont. E-mail: francis.dupont@inria.fr

Working Group E-mail: dns-wg@ripe.net

Routing Issues

Chair: Jean-Michel Jouanigot. E-mail: jimi@dxcoms.cern.ch

Working Group E-mail: routing-wg@ripe.net

Network Monitoring and Statistics Gathering

Chair: Bernhard Stockman. E-mail: boss@sunet.se

Network Maps

Chair: Daniele Bovio. E-mail: hi@frors12.bitnet

Working Group E-mail: maps-wg@ripe.net

European Connectivity

Chair: Milan Sterba. E-mail: milan.sterba@inria.fr

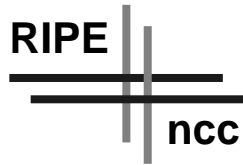
RIPE Database

Chair: Wilfried Woeber. E-mail: woeber@access.can.ac.at

Working Group E-mail: db-wg@ripe.net

Local Internet Registries

Chair: Daniel Karrenberg. E-mail: dfk@ripe.net



Working Group E-mail: `local-ir@ripe.net`

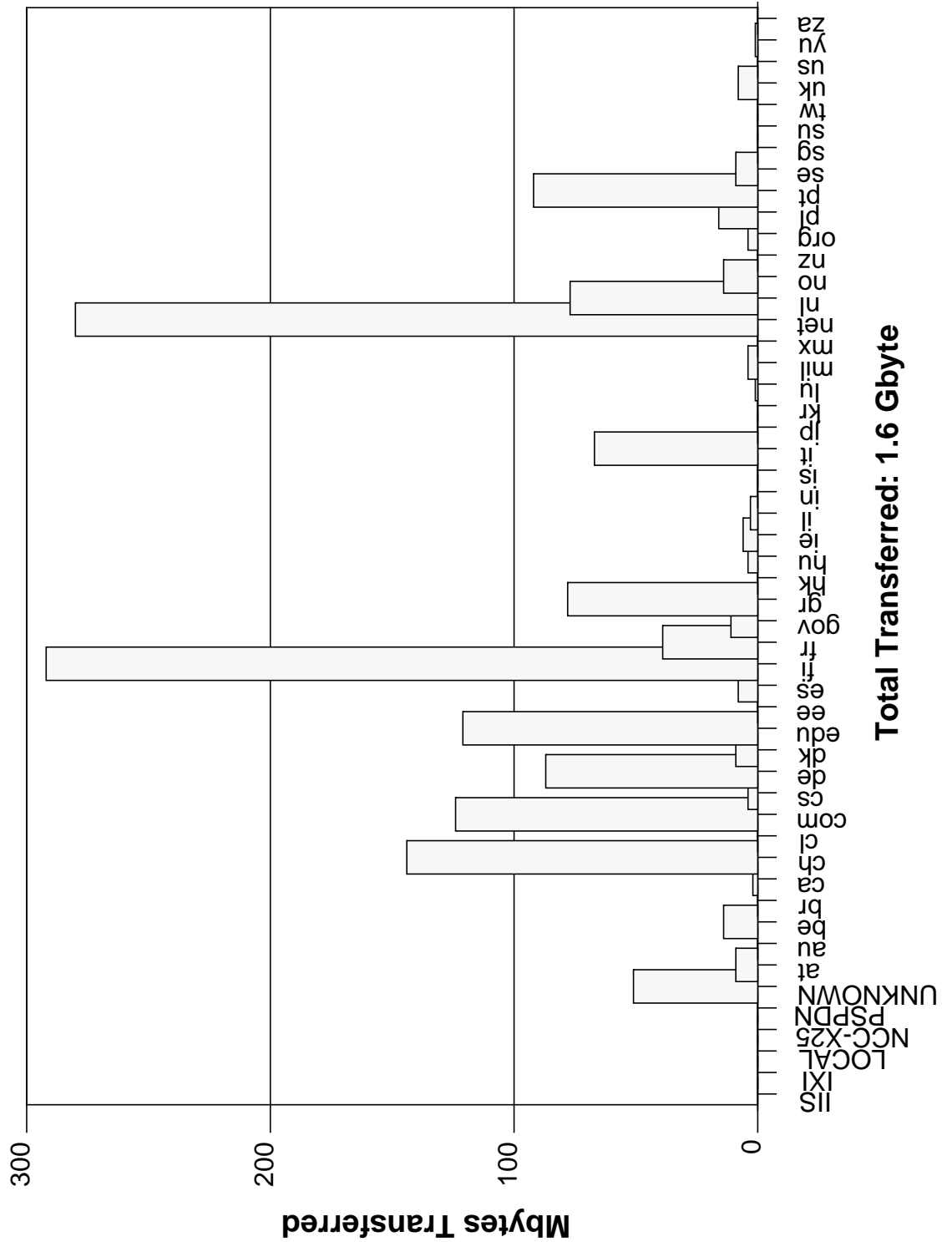
To subscribe to any working group send a message to:

`[listname]-request@ripe.net`

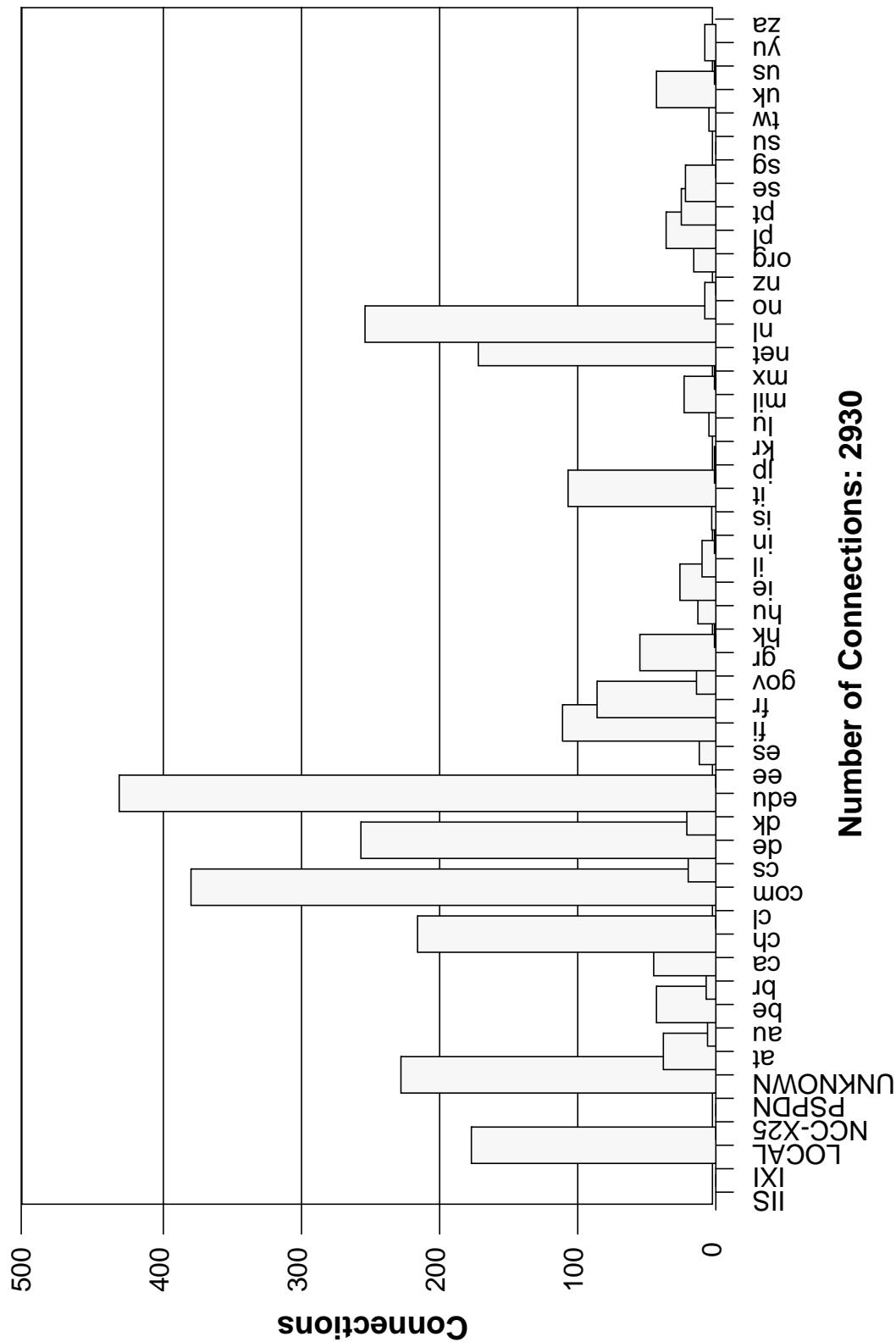
where [listname] is replaced by the name of one of the working groups specified above.

Appendix G

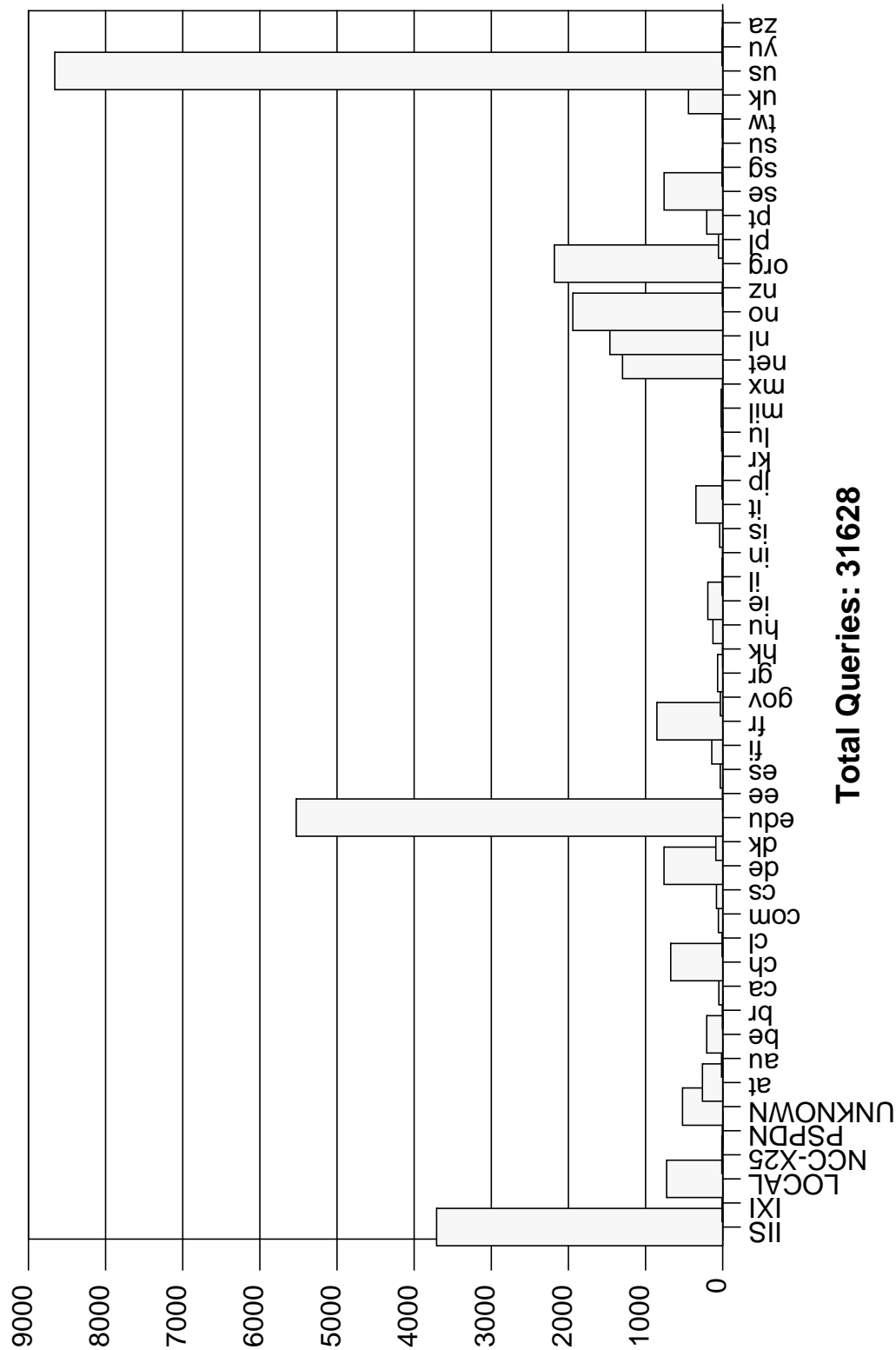
FTP Transfers Q4 1992



FTP Connections Q4 1992

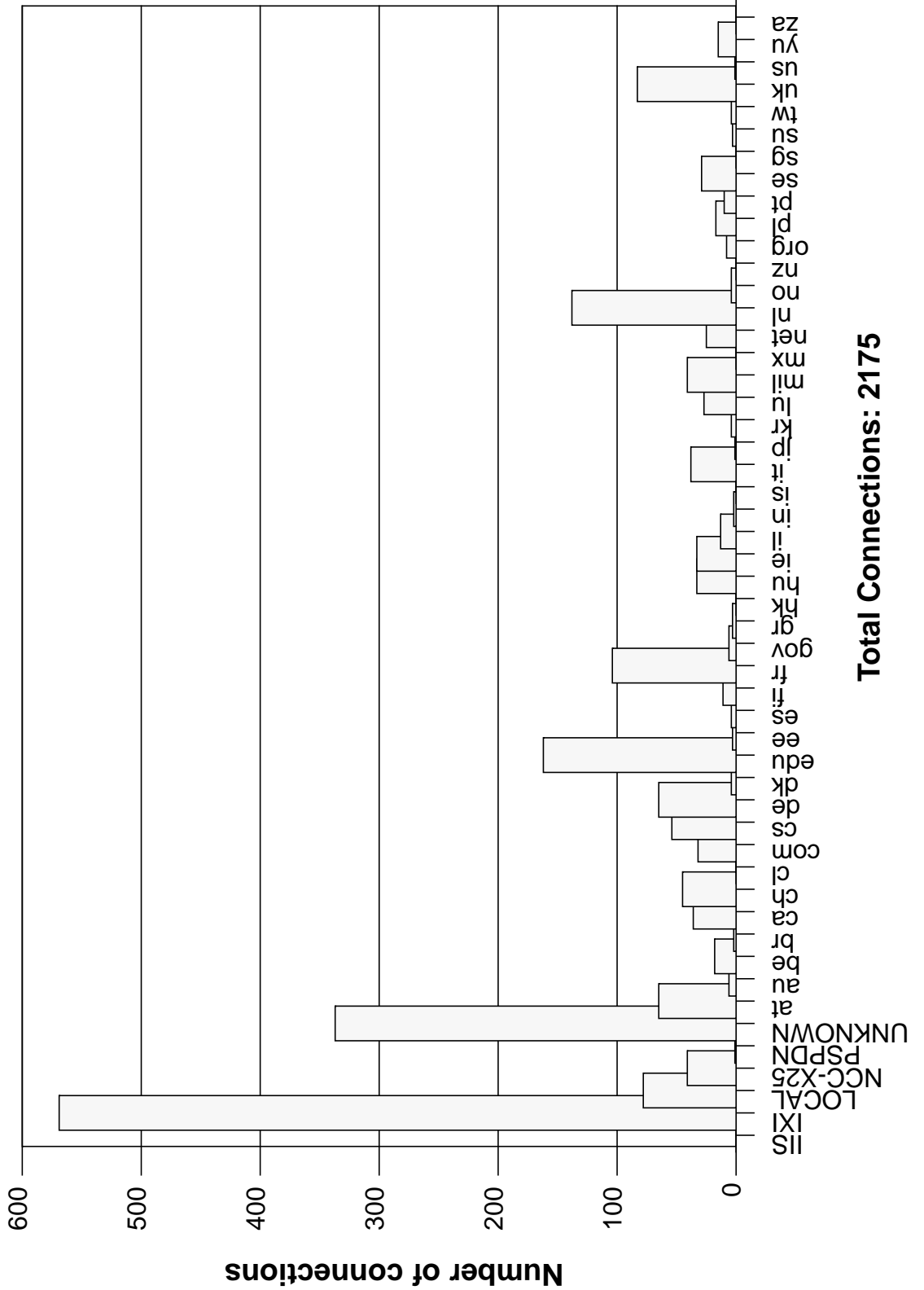


RIPE Database Queries Q4 1992

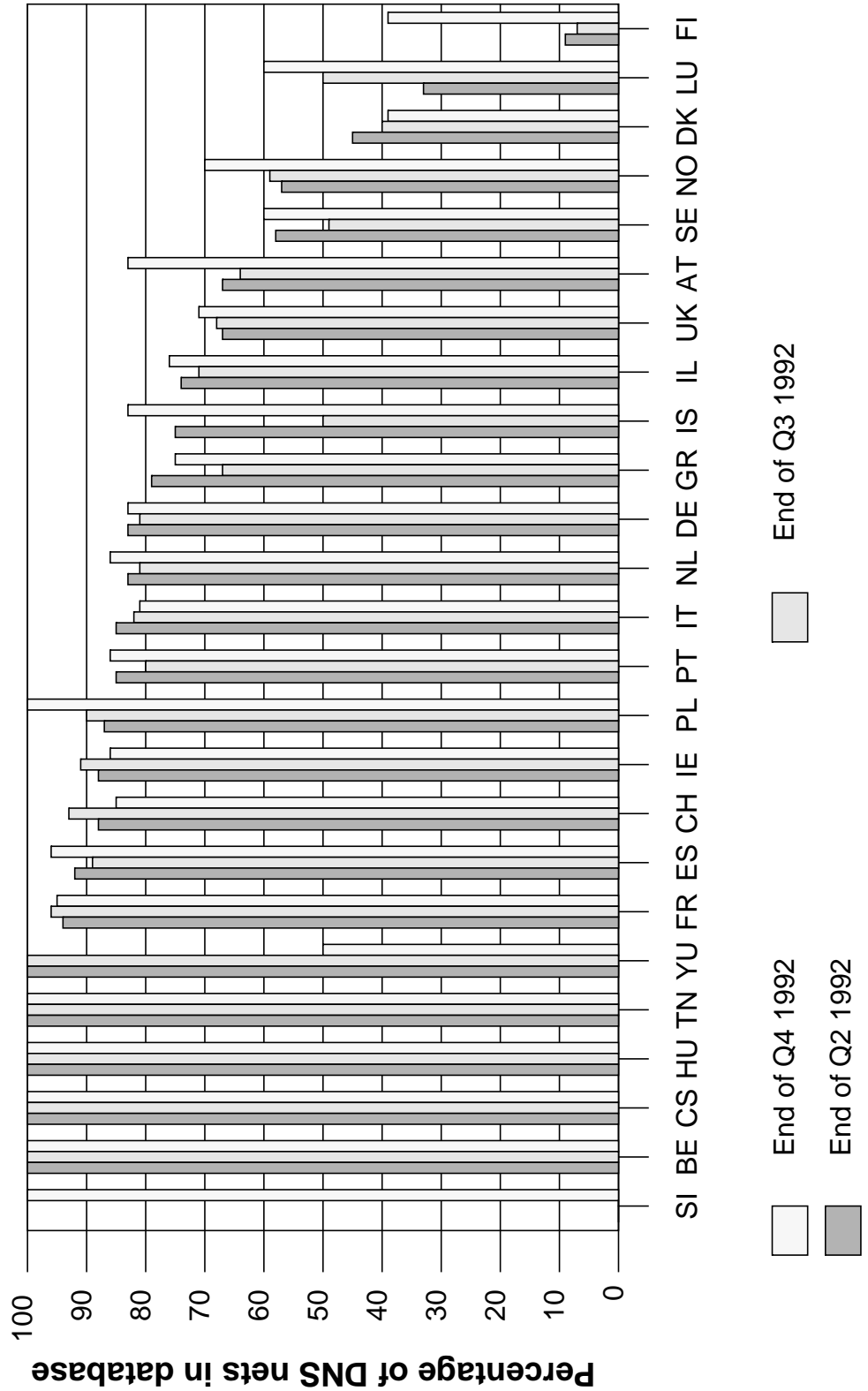


Total Queries: 31628

Interactive Information Server Usage Q4 1992



Networks in DNS Registered in RIPE Database 1992



RIPE DNS Hostcount per Country, December 1992

