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RIPE NETWORK COORDINATION CENTRE ANNUAL REPORT 2003



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The RIPE NCC Annual Report 2003 can also be found at:  
<http://www.ripe.net/annual-report>

## 1.0 Foreword

Formed in April 1992 by the RIPE community, the RIPE NCC was initially set up to operate as a neutral and impartial organisation capable of supporting the technical co-ordination needs of organisations involved in IP networking. Once it became clear that there was a pressing need for a delegated Regional Internet Registry, the RIPE NCC was the ideal organisation to take on this essential task.

To describe the RIPE NCC as purely a Regional Internet Registry, therefore, does not do justice to the unique contribution that the RIPE NCC has made to the global Internet community since its inception. Over the last ten years the RIPE NCC has been successful in providing the allocation of Internet number resources to its members, as well as technical co-ordination and information services to the Internet community at large. This has been possible due to the nature of the organisation and its ability to adapt and introduce services to meet the changing needs of its members and other stakeholders. The RIPE NCC was able to respond effectively to the need for a second root server in Europe by deploying the K-root server at the London Internet Exchange (LINX) in 1997. The RIPE NCC has now successfully deployed anycast instances of the K-root server across Europe, as a service to the Internet community at large and to help ensure the resilience and reliability of the DNS system. Additionally, the RIPE NCC monitors the quality of the overall root name service and makes the results publicly accessible in real-time through the RIPE NCC DNS Monitoring site.

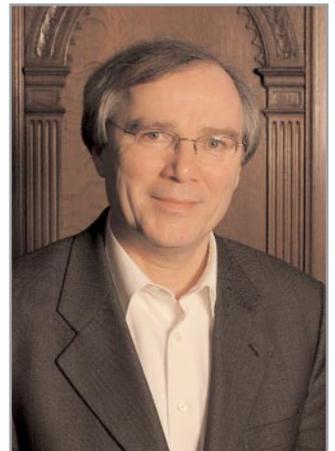
I am pleased to report that steady membership growth and successful cost control measures in 2003 saw the RIPE NCC more than make up for the operational loss of the previous year. A number of developments were deployed to improve the efficiency of the RIPE NCC and the services it offers its members. Notably, after more than five years of operations as an independent association, the RIPE NCC Executive Board felt it was time to review the articles of association to ensure they remain up-to-date. The new articles of association, approved by RIPE NCC members at the General Meeting in 2003, provide greater operational flexibility, allowing the RIPE NCC to respond more resiliently to industry changes and feedback from its members. This will further allow the RIPE NCC to achieve its objectives while remaining operationally stable.

The RIPE NCC maintains relations with an ever-growing community of stakeholders, industry bodies and representatives from government. This is crucial as the Internet today moves further into all pockets of society. The RIPE NCC actively reaches out to these groups to explain the proven, long-standing industry self-regulatory structures of the Regional Internet Registries (RIRs) and to secure their support for the existing registry process.

The RIPE NCC, in collaboration with a range of industry partners including the other RIRs, the Internet Society, the International Chamber of Commerce and the Internet Corporation for Assigned Names and Numbers (ICANN), has been extensively involved in the public, global debate surrounding the World Summit on the Information Society (WSIS). The outcome of the WSIS could impact seriously on the bottom-up, industry self-regulatory processes that have underpinned the Internet since its inception. It is therefore essential that the RIPE NCC and the other RIRs actively participate in these discussions and work together to represent the needs of their members and the Internet community as a whole.

In this regard, the formation of the Number Resource Organization (NRO) in 2003 was a major development. The NRO has been established to further facilitate RIR co-ordination, to provide third parties with a convenient single point of contact for the RIR system and to act as a body capable of safeguarding the unallocated number resource pool.

Finally, I would like to thank the RIPE NCC membership and the RIPE community for its continued support of the organisation. I look forward to working with all of you to continue to foster and support the long-established, bottom-up, industry self-regulatory processes as well as the innovation that has made the Internet the powerful, global tool that it is today.

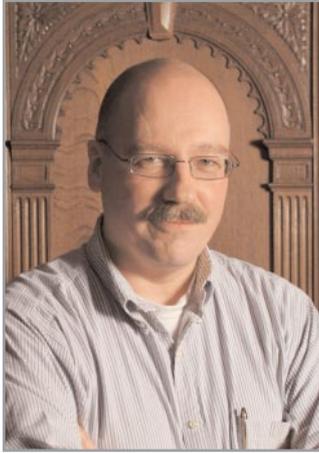


A handwritten signature in black ink, appearing to read 'Kees Neggers'. The signature is fluid and cursive, written on a white background.

Kees Neggers  
Executive Board Chair

## 2.0 Summary and Outlook

### Quality of Service



Axel Pawlik  
Managing Director

As a result of the feedback received from the 2002 RIPE NCC Membership and Stakeholders Survey, the RIPE NCC has continued to develop mechanisms to provide members with secure, efficient and simplified access to the RIPE NCC's services.

A major development in this regard was the LIR Portal, a customised web interface released in January 2003 to help reduce response time and give Local Internet Registries (LIRs) increased and simplified access to the RIPE NCC. With over 2000 LIRs registered, the LIR Portal has become an invaluable gateway for members to interact with the RIPE NCC.

To further streamline the request process, updated request forms for IP addresses and AS Numbers (ASNs) were released in August 2003. These new forms were the first significant update to the request forms used by the RIPE NCC since May 1996.

The RIPE NCC will build on the success of these initiatives to reduce response times and to offer more services through the LIR Portal. The Talk NCC project, which aims to provide telephone support for existing and prospective members, will be launched as an initiative to aid in reducing the completion time of requests.

### Membership Support

The activities of the RIPE NCC were also dominated by focused efforts in 2003 to proactively encourage feedback from members and to encourage their participation in RIPE Meetings and in the RIPE community.

To increase the awareness and involvement of the RIPE NCC membership and the RIPE community in RIPE Meetings, there was increased support provided for those unable to attend. This included audiocasting and webcasting of selected sessions, allowing remote participants to follow the discussions and presentations at the sessions. The RIPE NCC continued to distribute the RIPE NCC Member Update to keep members up-to-date with the latest issues and developments relevant to the RIPE NCC members in advance of the next RIPE Meeting.

Feedback from the RIPE NCC membership, particularly the 2002 RIPE NCC Membership and Stakeholders Survey, revealed that members expected the RIPE NCC to dedicate more attention to interacting with them at a local level. The main requests were for a stronger local presence of the RIPE NCC and for targeted support in various pockets of its service region.

As a result, the first RIPE NCC Regional Meeting was held in Dubai in December 2003. Regional meetings are a chance to establish direct contact and enhance the dialogue between the RIPE NCC and its members. These meetings provide participants with a forum to discuss Internet Protocol networking issues specific to their region. Two more regional meetings are planned for 2004.

### Co-ordinating Efforts with the Regional Internet Registries

The RIPE NCC, along with the other RIRs, continued to offer support for the emerging RIR, AfriNIC. Two AfriNIC staff members spent six months at the RIPE NCC offices in Amsterdam to learn about the activities of the various departments and to gain experience in an established RIR.

In October 2003, the Number Resource Organization (NRO) was formed by the signing of a Memorandum of Understanding (MoU) between the four RIRs. The NRO was established to further facilitate RIR co-ordination, to provide third parties with a convenient single point of contact for the RIR system and to act as a body capable of safeguarding the unallocated number resource pool.

The members of the NRO Executive Council are the CEOs of the four RIRs: Paul Wilson (APNIC), Ray Plzak (ARIN), Raúl Echeberría (LACNIC) and myself representing the RIPE NCC.

Together with the other RIRs, the RIPE NCC will continue to develop the NRO to facilitate the common approach needed for many aspects of RIR work. This includes the co-ordination of global addressing policies, the administration of upper level reverse DNS domains and negotiations with external entities. The RIRs will continue discussions with ICANN about the Address Supporting Organization (ASO) and the feasibility of the NRO taking on this task.

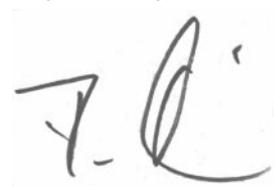
The RIPE NCC, along with the other RIRs, will continue to participate in the World Summit on Information Society (WSIS) arena, paying particular attention to increasing the role of the RIRs in the inter-summit process. The RIRs will continue to co-ordinate efforts by actively participating in discussions and outreach activities in order to win continued support for the long-established, industry self-regulatory process that is the basis of the current IP resource allocation and administration system.

### **Serving the Internet Community**

As the organisation responsible for operating the K-root server, the RIPE NCC will continue to deploy anycast instances throughout the RIPE NCC service region. Up to ten more instances of K-root will be deployed in 2004 in order to further improve the distribution of this crucial service in various Internet regions and increase its resilience against Distributed Denial of Service (DDoS) attacks. As K-root is one of the 13 root servers, this also means improvement for the Root Server System as a whole. As requested by the RIPE community, the RIPE NCC will continue to monitor the quality of the root name service and make the results publicly accessible through the RIPE NCC DNS Monitoring site.

Furthermore, the RIPE NCC will use its position as a neutral, credible and authoritative information source to foster open forum discussions and to supply timely and accurate network and Internet-related information to the Internet community. This is becoming an increasingly important aspect of the RIPE NCC's work, especially in regard to countering speculative claims about the future of Internet resources and their availability.

I would like to thank the RIPE NCC members for their ongoing support of the RIPE NCC and call for their continued participation in the long-established processes that have been developed by the Internet community over the years. Meeting the changing needs of the Internet and the community responsible for operating its infrastructure remains a key responsibility, and one which the RIPE NCC is in a unique position to fulfil.



Axel Pawlik  
Managing Director

### 3.0 What is the RIPE NCC?

The RIPE Network Coordination Centre (RIPE NCC) is an independent, not-for-profit membership organisation that supports a membership base of around 3,500 members in more than 90 countries across Europe, the Middle East, Central Asia and African countries located north of the equator.

#### Role

The RIPE NCC supports the infrastructure of the Internet through technical co-ordination in its service region and beyond. The most prominent activity of the RIPE NCC is to act as the Regional Internet Registry (RIR) in its service region, providing global Internet resources and related services (IPv4, IPv6 and AS Number resources).

The RIPE NCC also provides services for the benefit of the Internet community at large, including the development and maintenance of the RIPE Whois Database and administrative support for the RIPE community. Other activities include outreach activities with governments and industry-related organisations, management of one of the 13 root name servers (k-root), deployment of a neutral measuring network that provides publicly accessible and authoritative statistics on the operation of the Internet and deployment of a routing registry.

All activities and projects are described in the annual RIPE NCC Activity Plan. This is part of the "RIPE NCC Activities, Expenditures and Charging Scheme 2003" document, which can be found at:

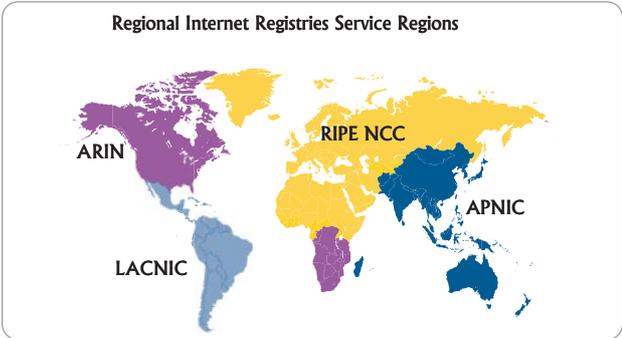
<http://www.ripe.net/ripe/docs/ap2003.html>

**Other Regional Internet Registries**

- APNIC: [www.apnic.net](http://www.apnic.net)
- ARIN: [www.arin.net](http://www.arin.net)
- LACNIC: [www.lacnic.net](http://www.lacnic.net)

New Countries Served in the RIPE NCC Service Region in 2003 *	
ISO Code	Country
IQ	Iraq

\* Countries are shown as listed in the ISO 3166 country code list.



The mission of the RIPE NCC is to perform activities for the benefit of the membership, primarily activities that the members need to organise as a group, although they may compete with each other in other areas. While an activity may result in services being provided to an individual member, performing the activity as a whole must benefit the RIPE NCC membership as a group.

Membership is open to anyone using the RIPE NCC services. The activities and services of the RIPE NCC are defined, performed, discussed and evaluated in an open manner. In all of its activities, the RIPE NCC observes strict neutrality and impartiality with regard to individual members. The RIPE NCC membership consists mainly of Internet Service Providers (ISPs), telecommunication organisations and large corporations.

More information about the activities of the RIPE NCC is provided in the RIPE NCC Information Sheet, available at:

<http://www.ripe.net/ripencc/about/infosheet.pdf>

A detailed map of the RIPE NCC service region can be found at:

<http://www.ripe.net/region-maps/>

## Structure

The organisational structure of the RIPE NCC consists of:

- Members who provide input on the RIPE NCC Activity Plan and Budget and who vote on the RIPE NCC Charging Scheme at the RIPE NCC General Meeting; they also give general input on the activities and services of the RIPE NCC through participation on public mailing lists and at open RIPE Meetings.
- The Executive Board as appointed by the RIPE NCC membership.
- The RIPE NCC staff.



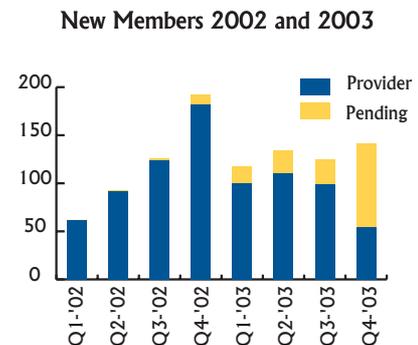
The RIPE NCC Executive Board. From left to right: János Zsakó, Kees Neggers, Frode Greisen, Manfredo Miserocchi, and Nigel Titley.

## 4.0 Membership Report

In 2003, 548 members applied for RIPE NCC membership as compared to 530 members in 2002. Due to mergers, closures and non-payment of members, the net growth was only 219 members. This is an increase of 6.7% compared to 2002.

Actual Membership			
	2001	2002	2003
Small*	2,536	2,503	2,664
Medium	441	614	659
Large	145	152	165
Total	3,122	3,269	3,488

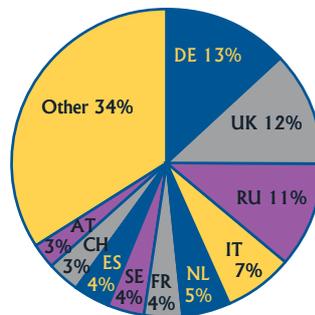
\* This category includes Enterprise members.



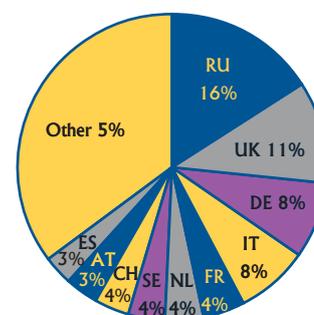
Membership growth was steady during the year with an average of between 40 and 50 new members per month.

There has been continuous membership growth in Russia and a decline in new members in Germany. Germany still has the largest number of members in the RIPE NCC service region with 483 members.

**Total RIPE NCC Membership per Country**



**New Members per Country 2003**



## 5.0 Services and Projects

### 5.1 Registration Services

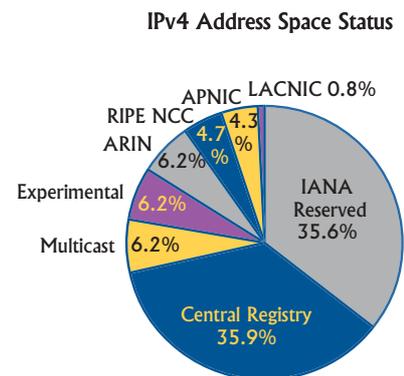
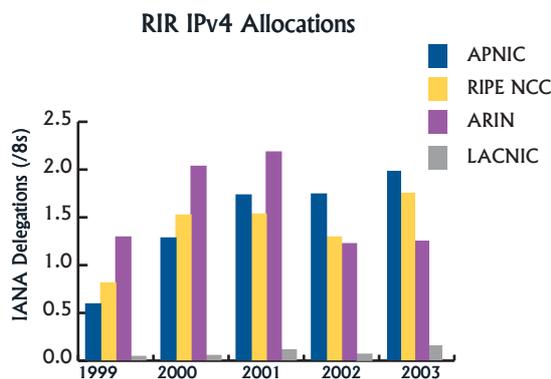
One of the RIPE NCC's activities as a Regional Internet Registry is to provide registration services to its members. The overall goal is to fairly distribute Internet resources needed for the stable and reliable operation of the Internet globally.

Among the most important services supplied by the RIPE NCC are the allocation and assignment of IP address space, ASNs and the management of reverse domain name space. Other areas of activity include training LIRs and the production of documentation to support registration services activities. In addition, the RIPE NCC works with LIRs to improve the quality and accuracy of registration data. The goals are to ensure that registrations comply with the RIPE community's policies and that the contact information is accurate and up-to-date.

In 2003, the RIPE NCC processed a total of 23,535 requests for resources and related assistance (as compared with a total of 21,913 requests in 2002). This represents a 7% increase from 2002. In 2003, the RIPE NCC allocated 1.75 /8s (as compared to the 1.27 /8s allocated in 2002). The initial response time for resource requests and membership applications continued to improve in 2003. The response time for an Internet resource request remained stable at under one working day. The Registration Services Department is also working to reduce the time to completion of requests as well as the initial response time.

#### IPv4

The RIPE NCC continued to allocate address space from the 82/8 IPv4 block received from the Internet Assigned Numbers Authority (IANA) in November 2002, as well as from previously allocated /8s. It allocated more than 29 million IPv4 addresses. This is equivalent to about one /8 in seven months. The RIPE NCC also received a new IPv4 address range from the IANA in November 2003 - [83.0.0.0 - 84.255.255.255].



#### IPv6

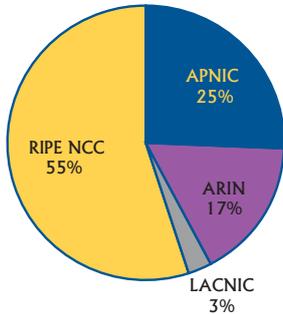
The RIPE NCC received its fourth and fifth /23 IPv6 allocation from the IANA in February 2003 and July 2003 respectively.

There has been rapid growth in the number of IPv6 allocations made after the policy approved at RIPE 42 was implemented in July 2002.

The ranges allocated to the RIPE NCC at the end of 2003 were:

- 2001:0600::/23
- 2001:0800::/23
- 2001:0A00::/23
- 2001:1400::/23
- 2001:1600::/23

Total RIR IPv6 Allocations  
1999-2003



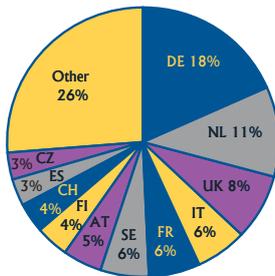
In 2003, 139 /32 allocations were made to RIPE NCC members, an increase of 56% over the previous year. In total, 278 IPv6 allocations have been made by the RIPE NCC since it started allocating IPv6 address space in 1999. From the 63 /35 allocations made under the provisional IPv6 policy agreed in 1999, 52 had been expanded to /32, the current minimum allocation size, by the end of 2003. 64 /48s have been assigned for Internet Exchange Points (IXPs) since the interim policy was agreed in 2001.

<http://www.ripe.net/ripe/docs/ipv6-policy-ixp.html>

Two root name server operators (I and K) have requested IPv6 address space. The RIPE community has a policy allowing root name servers to receive a block of the minimum allocation size (currently a /32).

<http://www.ripe.net/ripe/docs/ipv6-rootservers.html>

RIPE NCC IPv6 Allocations  
Per Country 1999-2003



### Reverse Delegation

As part of member services, the RIPE NCC provides reverse domain delegations for allocated IPv4 and IPv6 address space.

In addition to the automated handling of reverse delegation requests, human handling was required for about 50% of requests received. These individuals also deal with user questions concerning reverse delegation. In 2003, the RIPE NCC delegated 342 /16 domains and 38,946 /24 domains.

During 2003, the RIPE NCC continued to make IPv6 reverse delegations available within both ip6.int and ip6.arpa. At the end of 2003, 130 /32 delegations had been made within ip6.arpa. This is a 260% increase from the previous year. The RIPE NCC made "ns-v6.ripe.net" available as a secondary name server for these domains. Delegation of /32 domains for LIRs whose /35 IPv6 allocations had not been expanded to /32 remained available. For more information on reverse delegation, see section 5.4 of this report.

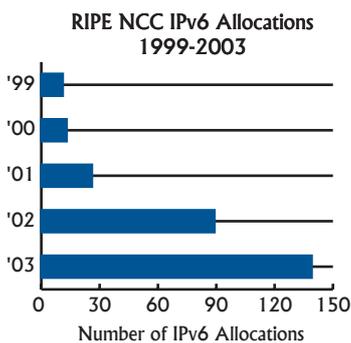
### Autonomous System Numbers

An Autonomous System is a connected group of one or more IP prefixes run by one or more network operators that has a single and clearly defined routing policy.

In the past year, the RIPE NCC assigned 1275 AS Numbers for LIRs. On average, 106 AS Numbers were assigned per month. This is an increase of 17% over last year. The RIPE NCC received a new block of 1024 AS Numbers from the IANA in September 2003. Assignment from this range did not begin until November 2003.

### Early Registration Transfer (ERX)

Many organisations based in the RIPE NCC service region obtained address space from InterNIC and the other registries that pre-dated ARIN's formation in 1997.



In December 2002, the RIPE NCC began transferring early registrations in the former Class B space from the ARIN Database to the RIPE Database. The transfer process continued throughout 2003. A total of 42 /8s need to be processed. Two /8s are processed at a time and, by the end of 2003, a total of 29 /8s had been completed.

There are more than 3000 registrations to be transferred from three /8s in the former Class C space.

### Training

During 2003, the RIPE NCC provided 71 training courses in 25 countries in the RIPE NCC service region. About 1500 LIR staff were trained in 2003.

The objective of the LIR Training Courses is to train the membership how to request Internet resources and how to use the RIPE Database.

The training material is updated monthly to ensure that members are aware of any recent policy changes decided by the RIPE community.

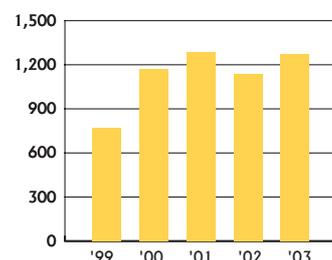
The RIPE NCC introduced a new course in 2003. The Routing Registry (RR) Training Course, aimed at experienced network operators, explains the features of the Routing Registry and the related tools, introduces relevant services of the RIPE NCC and explains the basics of the Routing Policy Specification Language (RPSL). The course is given through presentations, demonstration of tools and interactive practical exercises.

The DNS Security (DNSSec) Training Course, introduced in 2002, is aimed at experienced DNS operators and explains how to implement DNSSec in an operational environment.

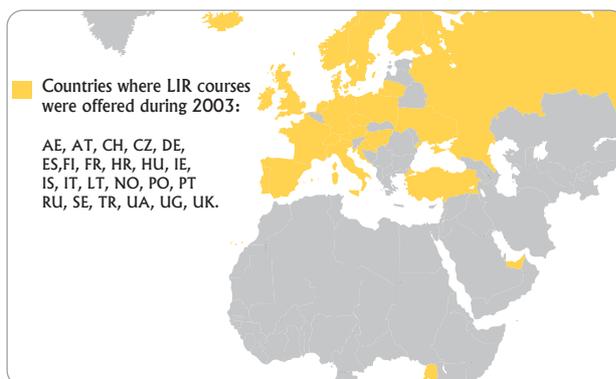
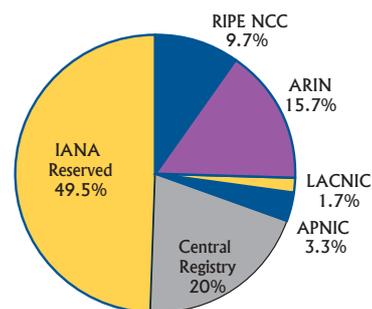
Additionally, IP Request Tutorials were given at RIPE and AfrINIC Meetings as well as at the RIPE NCC Regional Meeting in Dubai. The tutorials contain basic material selected from the current LIR Training Course material and are open to all meeting participants.

The RIPE NCC continuously tries to find ways to improve its training service and to reach as many members and representatives from the RIPE community as possible. The RIPE NCC is currently investigating the use of new training methods and media types that will allow the training team to provide a better service and to train more people more cost effectively.

RIPE NCC ASN Assignments  
1999-2003



Global ASN Distribution



Further information about the RIPE NCC LIR Training Courses can be found at:

<http://www.ripe.net/training/>

## Tools and Support for LIR Operations

### LIR Portal

LIR Portal Statistics	
Number of active LIR accounts	2,183
Number of user accounts	4,296
Average accounts per LIR using portal	1.96
Number of PKI certificates created	326
Number of data modifications	10,090
Number of requests submitted:	
- ASN request	102
- IPv4 request	48
- IPv6 request	23
- IPv4 PA request	546
- IPv4 PI request	51
- PA Wizard	17

The RIPE NCC LIR Portal was released in January 2003 to help reduce response time and improve communication with RIPE NCC members. The portal provides LIRs with increased and simplified access to the RIPE NCC via a customised web interface.

At the end of 2003, there were 2,183 active LIR accounts and 4,296 user accounts. This is an average of almost two user accounts per LIR.

Since version 1.0 was released, the following features have been added:

- Allocation Editor, allowing users to modify allocation objects
- Public Key Infrastructure (PKI) authentication
- Functionality allowing all eight request forms to be completed and submitted directly through the portal
- An IPv4 PA assignment wizard that takes the user through the request steps one-by-one
- Multi LIR login, allowing users to switch between LIR accounts without logging out
- Custom content: notification of training courses within the LIR's country

Version 2.0 of the LIR Portal was released in December 2003. New features of the portal will continue to be added based on input from the membership.

### Improved Secure Communication System for RIPE NCC Members

Many services that the RIPE NCC provides for its members have requirements of authentication, non-repudiation, data integrity, data confidentiality and access control. An approach based on X.509 PKI technology and standards was chosen to make interaction with the services provided by the RIPE NCC to its members more convenient and secure. The phases of the implementation are:

- LIR Portal - to create new client certificates and log in with them
- RIPE Database - to use the certificates for database updates
- Registration Services communications - to enable secure communication with the RIPE NCC Hostmasters
- Billing - to use the same technology for financially related correspondence

The LIR Portal work was completed, and the community process achieved consensus on the RIPE Database design. A more detailed plan for the remaining phases will be presented to the community and implemented based on their feedback.

### RIPE Community Policy Developments in 2003

The RIPE NCC adheres to Internet address distribution policies developed by community consensus in the RIPE Address Policy Working Group. The RIPE LIR Working Group was divided into two groups in 2003: the RIPE Address Policy Working Group and the RIPE NCC Services Working Group. Through open discussions at RIPE Meetings and on public mailing lists, consensus for the following policy changes was reached:

- During 2003, the RIPE community updated and shortened the IPv4 policy documentation. This can be found at:

<http://www.ripe.int/ripe/docs/ipv4-policies.html>

- In addition, two policies were introduced that allow for “sub-allocation” and “assignments for Internet experiments”.

The RIPE NCC will continue its efforts to keep policy documentation clear and concise. Policy changes will be reported in an efficient and easily accessible format. The RIPE Document Store now contains a listing of recent changes to RIPE Documents as a service to the RIPE community. The RIPE Document Store is available at:

<http://www.ripe.net/ripe/docs/updates.html>

## 5.2 Membership Liaison

In order to strengthen membership interaction, the RIPE NCC developed the role of the Membership Liaison Officer (MLO) in 2003. The MLO is responsible for managing liaison activities and regional support to all members throughout the RIPE NCC service region. The primary function of these activities is to make it easier to continuously evaluate and address the changing needs of RIPE NCC members.

This includes establishing close contact with the RIPE NCC Services Working Group and following a more focused approach to industry-related meetings and events. The MLO also co-ordinates regional support activities that enable the RIPE NCC to establish and maintain direct contact with members across its entire service region.

### RIPE NCC Regional Meetings

As a result of the Membership Survey in 2002 and other feedback from the membership, it became apparent that the RIPE NCC was expected to dedicate more attention to interacting with members at a local level. The main requests were for a more local presence of the RIPE NCC and for targeted support in various pockets of its service region.

Regional meetings are a chance to establish direct contact and enhance the dialogue between the RIPE NCC and its members. These meetings provide participants with a forum to discuss IP networking issues specific to their region.

The first RIPE NCC Regional Meeting was held for the Middle East area in Dubai, from 7 - 9 December 2003. More information about this RIPE NCC Regional Meeting can be found at:

<http://www.ripe.net/ripenncc/regional-meetings/dubai-2003/>

## 5.3 Database Services

One of the main public services provided by the RIPE NCC is the operation and maintenance of the RIPE Whois Database. The database contains information about IP address space and AS Number allocations; DNS reverse delegations; routing policies; and contact information. It is used by the RIPE NCC and LIRs to record information about number resources and by ISPs to publish routing policies. End Users, most of who are not RIPE NCC members, use this information for various purposes, such as network troubleshooting.

The RIPE Whois Database can be queried by a WHOIS client using the server [whois.ripe.net](http://whois.ripe.net), or by a web browser at:

<http://www.ripe.net/perl/whois>

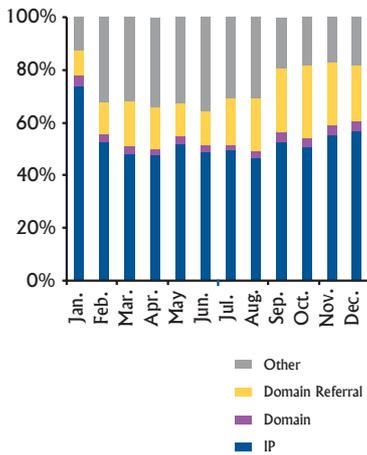


Saleem Al-Balooshi (Etisalat) and Axel Pawlik (RIPE NCC) at the RIPE NCC Regional Meeting (Dubai, December 2003)

## Facts & Figures

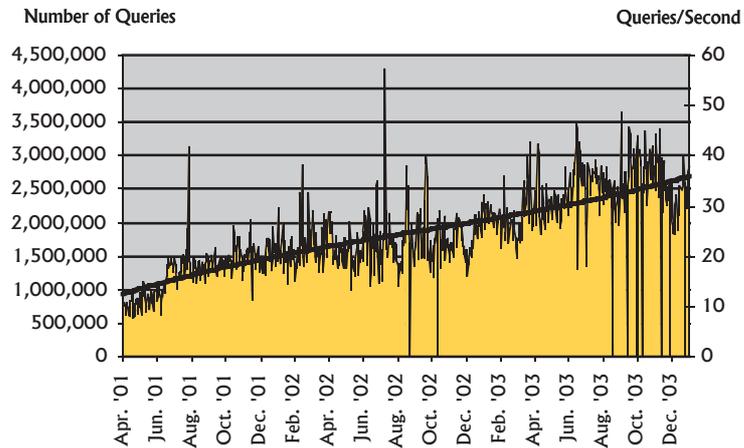
The contents of the database showed a continued steady growth in records representing IPv4 allocations and the associated contact information and DNS reverse delegations. There was a reduction in the total number of records with contact information, as these are now deleted automatically when they are not referenced by other records for an extended period of time. A number of ccTLD registries also removed information about their domains from the database, lowering the total number of domain records. The total number of records rose from about 1.7 million to 1.9 million.

Query Types During 2003



There was an increase in query rate, exceeding 30 queries/second average on a weekly average basis, coming from over 50,000 unique IP addresses each day. These queries return on average almost five million objects per day, more than twice the content of the whole database. The majority of these queries are requests for address space information. However, as in previous years, there has been a significant increase in queries for information about domains in ccTLD databases.

RIPE Database Query Load



## New and Modified Database Features

### IPv6 Proxy

IPv6 access to the RIPE Whois Database was made available in 2003 by means of a proxy service. Additionally, an IPv6-enabled client was made available for users. Full information, including design notes and the rationale for using a proxy, can be found at:

<http://www.ripe.net/ripenc/pub-services/db/whois-ipv6.html>

### Unreferenced Personal Information Clean-up Mechanism

Periodic automatic deletion of **person** objects that are not referenced as a contact was activated to reduce the amount of private data and free the resources consumed by them. Details about this may be found at:

<http://www.ripe.net/ripe/mail-archives/db-wg/2003/msg00499.html>

### Improvements in the RIPE Database Software

The software used to update the database was restructured. The main goals were to improve the acknowledgement messages that users receive from the RIPE Whois Database and provide clearer error reporting and authorisation information. A secondary goal was to make the software easier to maintain and modify, in order to reduce the time spent fixing bugs and adding new features. More details are available at:

<http://www.ripe.net/db/dbupdate/>

A public source code release was made that includes these changes:

<http://www.ripe.net/ripe/mail-archives/db-wg/2003/msg00570.html>

### Improved Security Mechanisms for Hierarchical Data Changes

As part of an ongoing effort to improve the security of information in the database, the protection scheme for some hierarchical data was changed. This involved updating a number of records for IPv4 allocations to LIRs. Details about the change are available at:

<http://www.ripe.net/ripe/mail-archives/db-wg/2003/msg00729.html>

Maintainers of records now receive notification when a new more-specific record is created, as proposed at:

<http://www.ripe.net/ripe/mail-archives/db-wg/2003/msg00479.html>

Maintainers can now authorise the deletion of any object that they can authorise the creation of. This is intended to help the case where an LIR or other user loses control over a portion of the resources they maintain. More details are available at:

<http://www.ripe.net/ripe/mail-archives/db-wg/2003/msg00481.html>

### RPSLng

RPSLng is an effort to extend RPSL language, enabling the language to document routing policies for the IPv6 and multicast address families currently used in the Internet. RPSLng is an Internet draft being revised following the IETF process. The RIPE NCC has implemented the language in the whois server, as well as updating the IRRToolSet to support RPSLng:

<http://www.ripe.net/db/rpslng/>

### User Support

High quality support for database users is an important activity of the RIPE NCC. Part of this activity is the database e-mail help desk: <ripe-dbm@ripe.net>.

Spam filtering was added to the mailbox to increase the amount of time available for handling user tickets. In addition, a dedicated fax line was added to eliminate delays in having faxes passed from the general RIPE NCC fax line. About 20% of this function is performed by Registration Services staff, thus improving the understanding of registration-related database issues.

## 5.4 DNS Services

### Reverse Delegation

As part of member services, the RIPE NCC provides reverse domain delegations for the allocated IPv4 and IPv6 address space. This remains the primary DNS activity carried out by the RIPE NCC.

A review of the RIPE NCC reverse DNS service provisioning system resulted in a project to revise parts of the back-end systems and to provide LIRs with a way to maintain their reverse domains in line with other interfaces they use to interact with the RIPE NCC. For the original proposal of this project see:

<http://www.ripe.net/reverse/proposal.html>

Discussion on this proposal has taken place on the RIPE NCC Services mailing list and was summarised in:

<http://www.ripe.net/ripe/mail-archives/ncc-services-wg/2003/msg00361.html>

As well as setting up the reverse DNS zones, the RIPE NCC also monitors the quality of the reverse name servers that it delegates and publishes statistical reports.

More information about reverse delegation is available at:

<http://www.ripe.net/reverse/>

### Secondary DNS

The provision of secondary DNS services forms an important part of the service to ensure the reliability and robustness of the general DNS infrastructure.

At the end of 2003, the RIPE NCC was providing a stable secondary DNS name service to around 210 country code Top-Level Domains (ccTLD) related zones and several other second-level zones. The RIPE NCC provides the secondary DNS service to any ccTLD organisation that requests it, according to the policy. The RIPE NCC offers this service free of charge.

In 2002, the RIPE NCC agreed to host ns.eu.net on a temporary basis due to the bankruptcy of KPNQwest, the company that was operating this much relied on service. After a year and a half of maintaining the machine, the RIPE NCC phased out the temporary service in November 2003.

### K-Root

The RIPE NCC operates k.root-servers.net, one of the 13 root name servers in the world. These root name servers are a crucial part of the Internet DNS infrastructure.

In February 2003 K-root started to use NSD as its DNS server software in an effort to address growing concerns about the lack of diversity of DNS implementations used by important DNS servers.

During 2003 the RIPE NCC started to deploy additional instances of K-root by anycasting as first described in ripe-268. The main objective of this effort is to increase the resistance of the service against Denial of Service (DoS) attacks. In addition it improves the local service quality during normal operations.

A detailed plan along with a call for expressions of interest to host a mirror instance of K-root was presented in September 2003.

The first additional node of K-root was enabled at the Amsterdam Internet Exchange (AMS-IX) in August 2003. The RIPE NCC applied a common standard set-up for both the LINX and AMS-IX instances. The RIPE NCC will continue to expand the K-Root anycast service in 2004. More information can be found at:

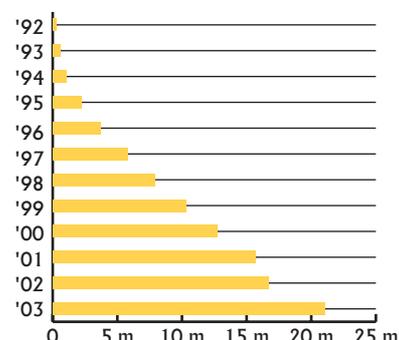
<http://k.root-servers.org>

### Hostcount

Every month since the beginning of 1992, the RIPE region Hostcount is performed to indicate the growth in the service region. At the end of 2003, the amount of hosts registered in the RIPE NCC service region was almost 21,100,000. This represents an increase of approximately 4,420,000 (26.5%) in 2003. More information about the RIPE region Hostcount is available at:

<http://www.ripe.net/hostcount/>

DNS Hostcount (in millions)  
1992-2003



## 5.5 Test Traffic Measurements

The Test Traffic Measurements Service (TTM) is designed to reliably and impartially measure end-to-end performance characteristics of the inter-provider Internet. This is achieved by installing test-boxes at participating sites. These test-boxes send measurement traffic to each other. From this traffic, packet-losses, delays and other parameters are determined according to the metrics developed by the IETF IP Performance Working Group (IPPM-WG).

During 2003, a total of 24 test-boxes were sold. Three factors appear to have contributed to the number of text-boxes sold: the release of the IPv6 version (see below), the release of the beta version of the DNS Monitoring site (see 5.8), and the plan to lower the TTM service fees in 2004.

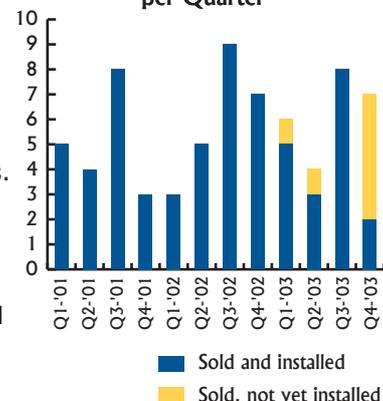
There has been a continuous improvement of the TTM service during the year. As the number of native IPv6 networks continues to grow, so does the interest in performance measurements for IPv6. The TTM code was therefore extended to support IPv6, making TTM the first product on the market to offer an active measurement suite for IPv6. This version of the software was released early 2003 and installed at all interested sites. At the end of the year, 21 test-boxes were doing measurements on both IPv4 and IPv6 networks.

During the year, the RIPE NCC studied the possibility of routinely measuring capacity and available bandwidth between test-boxes using non-intrusive tools. While considerable progress was made, the conclusion was that none of the tools currently available were suitable for production measurements. These conclusions were presented in a paper and at the December 2003 IRTF-sponsored workshop on Bandwidth Estimation at CAIDA, along with suggestions to the developers on tools to improve production measurements. These studies will continue in 2004.

Early in 2003, the Internet was attacked by the so-called Sapphire/Slammer Worm. The spread of this worm showed up clearly in the TTM data. Delays along some 40% of the paths increased almost immediately after the spread of the worm started, dropping back to normal as soon as filters were installed at many sites a few hours later. A report on this incident was published a week after the event and received very positive feedback.

During 2003, the RIPE NCC collaborated with several university and corporate research groups on the analysis of the TTM data. Other research

Number of Test-Boxes Sold per Quarter



projects were carried out independently of the RIPE NCC using data collected by the TTM. An overview of published papers can be found at:

<http://www.ripe.net/ttm/Documents/Various/various.html>

It has become clear that making the raw data available is a useful service for research purposes and for the ISP community.

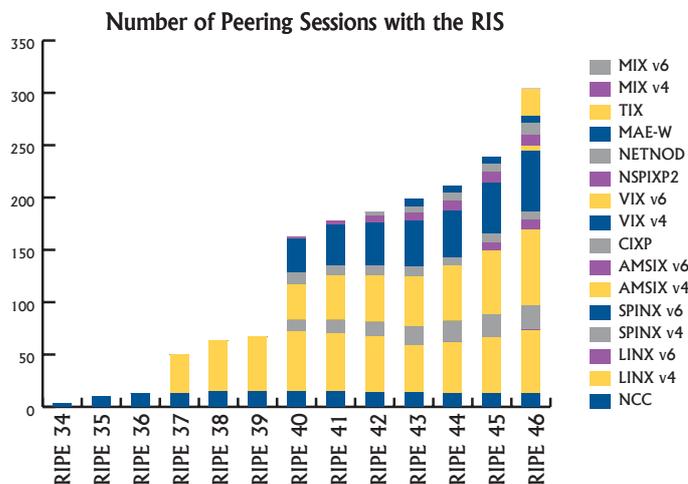
During 2003 the business model of the TTM service was evaluated. As a result, in 2004 the TTM service will become part of the RIPE NCC Information Services effort. The first change will be to make the data available to a wider audience, including the ISP community, researchers, vendors, journalists and the general public. Access restrictions to the data will be dropped and the presentation of the data will be reviewed. As a consequence, the annual service fee will be reduced effective from 1/1/2004. New measurements such as bandwidth, IPv6 specific parameters and DNS Monitoring (DNSMon) will be added.

More information about the RIPE NCC Test Traffic Measurement Service can be found at:

<http://www.ripe.net/ttm>

## 5.6 Routing Information Service

The Routing Information Service (RIS) collects inter-provider routing information at various points in the Internet infrastructure in near real-time. The information is time-stamped and stored in a database.



In 2003, the RIPE NCC focused on installing more Remote Route Collectors (RRCs), developing the myASn service and other products, turning the RIS into a regular and reliable service for those researching BGP and routing issues.

Remote Route Collectors are being used to collect data for the RIS. In 2003, two new collectors were installed, at the TIX (Zurich, CH) and MIX (Milan, IT), bringing the total number of RRCs to 11. Negotiations to install an RRC in New York and the Middle East are in progress. These new RRCs will improve the coverage of the Internet offered by the RIS. The software on all RRCs was upgraded to include support for IPv6 as well. IPv6 has been switched on at four locations, with more to follow in 2004.

The number of peering sessions increased from 214 in 2002, to 333 in 2003. This includes 32 IPv6 peering sessions. During the same period,

usage of the RIS web site increased by about 60%, from approximately 10,000 visitors/month downloading 200,000 pages, to 16,000 visitors/month downloading 360,000 pages.

The main new product based on the RIS data developed during the year was the myASn service. Currently, an RIS user has to enter queries to the database manually and compare the result against the expected output from his configuration. myASn automates this task: the user enters his routing configuration only once, and myASn constantly compares this against the actual situation seen on the net, warning the user about any differences. A prototype of the myASn application was shown at RIPE 46. The prototype will be developed into a full product and integrated with the LIR Portal in 2004. For more on myASn, see:

<http://www.ris.ripe.net/myasn>

During 2003, the RIPE NCC developed a tool to map IP addresses to AS Numbers. Studies have shown that tools mapping IP addresses to AS Numbers based on the Routing Registries are only correct in some 80% of cases. Using the actual RIB files, one can improve this to 99%. The tool (riswhois.ripe.net) is available as a whois server and a drop-in replacement for IRR-based tools.

The RIPE NCC also collaborated with several university and corporate research groups on the analysis of the RIS data. Other research projects were carried out independently of the RIPE NCC using the raw BGP data collected by the RIS. An overview of published papers can be found at:

<http://www.ripe.net/ris/analysis.html>

More information about the RIS can be found at:

<http://www.ripe.net/ris>

## 5.7 Deployment of Internet Security Infrastructure

The Deployment of Internet Security Infrastructure project (DISI) continued to focus on the security of the Domain Name System and the deployment of Domain Name System Security (DNSSec).

During 2003, the focus was on protocol development and operational issues of DNSSec. The work that started in 2002 on a specification to distinguish between key-signing keys and zone-signing keys was finished and has been published as IETF document "DNSKEY RR Secure Entry Point Flag" For the latest version see:

<http://www.ietf.org/html.charters/dnsext-charter.html>

In collaboration with NLnet Labs, documenting the operational issues specific to DNSSec has begun. This work has become IETF DNSOP draft document "DNSSEC Operational Practices". For the latest version see:

<http://www.ietf.org/html.charters/dnsop-charter.html>

The RIPE NCC has been actively involved in participating and organising technical workshops to test proposed DNSSec protocol changes.

The RIPE NCC continued to work on tools to ease DNSSec operations; the Net::DNS::SEC Perl library is available from CPAN; a key-management system has been developed and tested internally.

The RIPE NCC continued to offer the DNSSec Training Course. This course is aimed at experienced DNS operators and explains how to implement DNSSec in an operational environment.

More information and documentation produced as part of the DISI effort can be found at:

<http://www.ripe.net/disi/>

## 5.8 DNS Monitoring

The DNS Monitoring project was triggered by various publications claiming that all root name servers had become unreachable during one of the worm incidents in early 2003. Detailed reading showed that these studies suffered from two major flaws:

- Measurements originated from one site only
- ICMP instead of DNS traffic was used

This means that rate-limiting filters or problems near the measurement location can give misleading impressions on the availability of the root name servers. To provide a meaningful and comprehensive view, an alternative monitoring tool was needed.

During 2003, the RIPE NCC developed a beta version of a DNS monitoring tool. DNS Monitoring uses TTM test-boxes to provide an objective and up-to-date service overview of DNS root and participating Top-Level Domain (TLD) name servers. The measurements are presented at various levels of granularity showing the reachability of root servers and allowing users to distinguish between server-side and client-side problems. The DNS Monitoring site is available at:

<http://dnsmon.ripe.net>

## 5.9 ENUM

The RIPE NCC acts as a Tier 0 registry for the e164.arpa domain on behalf of the Internet Architecture Board (IAB).

ENUM is the Internet Engineering Task Force (IETF) standard as described in RFC 2916 to map telephone numbers according to the International Telecommunication Union (ITU) standard E.164 into the DNS. The purpose is to foster the convergence between the Internet and the telephony world by enabling each system to address the other.

The RFC 2916 document and the E.164 standard can be found at:

<ftp://ftp.rfc-editor.org/in-notes/rfc2916.txt>

<http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=T-REC-E.164>

The RIPE NCC's duties, according to the IAB instruction, are to provide DNS name service for the e164.arpa domain. The instructions can be found at:

<http://www.ripe.net/enum/instructions.html>

The RIPE NCC also delegates E.164 country codes to requesting entities (i.e. the Tier 1 registries) after approval by ITU Telecommunication Standardization Sector - Telecommunication Standardization Bureau (ITU-T TSB). The e164.arpa domain is the root of the ENUM namespace in the global DNS. ITU-T TSB handles delegation requests following the ITU-T - Study Group 2 (ITU-T SG2) Interim Procedures. More information can be found at:

<http://www.itu.int/ITU-T/inr/enum/procedures.html>

In 2003, the RIPE NCC processed 13 requests for delegation of 11 E.164 country codes. There are now 23 delegations under the e164.arpa domain: 21 country codes and two non-geographical codes.

More details can be found at:

<http://www.ripe.net/enum/>

## 6.0 RIPE

RIPE (Réseaux IP Européens) is a collaborative forum open to all parties interested in wide area IP networks. The objective of RIPE is to ensure the administrative and technical co-ordination necessary to enable the operation of the Internet. There are no membership requirements for participation in RIPE; activities are performed on a voluntary basis and decisions are formed by consensus.

The work of the RIPE community is carried out within a variety of working groups. Each of these RIPE Working Groups has one or more mailing lists where relevant topics are discussed. The RIPE community is the most important source of public input for the RIPE NCC and also plays a significant role in the development of the annual RIPE NCC Activity Plan.

Policies regarding IP administration are created within RIPE, in particular the Address Policy Working Group. The RIPE NCC itself does not set policies but ensures the consistent application of policies within its service region.

More information about RIPE Working Groups is available at:

<http://www.ripe.net/ripe/wg/>

### RIPE Meeting Support

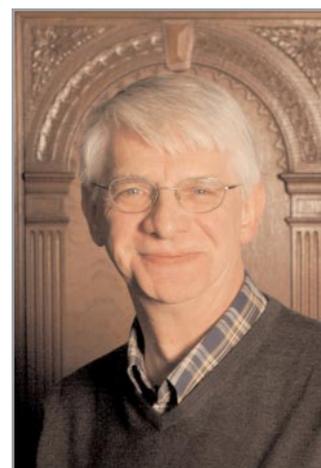
Although two distinct entities, RIPE and the RIPE NCC are interdependent in their operations.

The RIPE NCC is committed to supporting the bottom-up, industry self-regulatory structure developed by the RIPE community. As an integral part of this structure the RIPE NCC provides administrative support for RIPE and facilitates the organisation of RIPE Meetings.

### RIPE Meetings

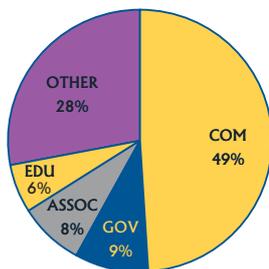
RIPE Meetings currently take place three times a year. The RIPE Working Groups gather to openly discuss the current challenges and to develop solutions at each of these meetings. The main purpose of these open meetings is to discuss technical and policy issues affecting Internet administration and operations specific to IP networking. Network operators also meet at RIPE Meetings to discuss technical co-ordination matters.

RIPE Meetings During 2003		
RIPE 44	27-31 January	Krasnapolsky Hotel, Amsterdam, NL
RIPE 45	12-16 May	Hotel Fira Palace, Barcelona, Spain
RIPE 46	1-5 September	Krasnapolsky Hotel, Amsterdam, NL



Rob Blokzijl  
RIPE Chair

2003 RIPE Meeting Attendance per Organisational Category



To increase the awareness and involvement of the RIPE NCC membership and the RIPE community in RIPE Meetings, there has been an increase in the support provided for those that cannot attend. This included enhancements to the webcasting of selected sessions that allow RIPE NCC members and the Internet community not at the meeting to follow important discussions.

As decided by the RIPE community, the LIR Working Group was split into two working groups. Issues involved with address policy-making in the RIPE region are now discussed in the Address Policy Working Group. Discussions about RIPE NCC activities and services take place in the RIPE NCC Services Working Group.

More information about RIPE Meetings can be found at:

<http://www.ripe.net/ripe/meetings/>

## 7.0 RIPE NCC in the Internet Industry

In 2003, the RIPE NCC continued to support and represent the interests of its membership and the RIPE community to Internet industry groups and government. The main goal of these outreach activities remains the promotion of the open, bottom-up, industry self-regulatory structure common to all RIR communities in managing Internet address resources.

The RIPE NCC represents the interest of its members and the RIPE community by actively participating in various forums and meetings. In 2003, the RIPE NCC responded to topical issues brought forward by the industry that included the migration to IPv6, the introduction of ENUM services, and the World Summit on Information Society (WSIS).

An essential part of these activities remained outreach to government representatives and members of the European Parliament. Governments have an important role in public policy formation of Internet infrastructure and it is vital that all RIR communities ensure that government representatives are provided with up-to-date, credible information. Policy makers – both in the public and private sectors – need a sound understanding of how the Internet has developed and what has made this development so successful. Clear understanding of the unique way in which the Internet's technologies and resources are developed and co-ordinated will ensure the future stability, growth and global reach of the Internet.

In 2003, the RIPE NCC has been active in meetings of the European Internet Foundation, EC Forums and WSIS. The purpose here is to represent the interests of RIPE NCC members and the RIR community as a whole and to allow members of the European Parliament and other European Commission representatives to fully understand the bottom-up, industry self-regulatory structure and long-standing processes that have secured the Internet infrastructure over the years.

In addition, the RIPE NCC has been proactively addressing articles in the press that have made speculative predictions about Internet address space. The importance here is to emphasise that the RIRs have authoritative, publicly available statistics that give a much more accurate picture of the current state of Internet resources. Responding to poorly informed rumours and allaying fear, uncertainty and doubt has been an important aspect of the RIPE NCC's external activities in 2003. In addition, the RIPE NCC has continued to keep its members up-to-date with the most recent developments through the Member Update, published four weeks before each RIPE Meeting.

More information about the Member Update is available at:

<http://www.ripe.net/newsletter/>

As a result of the Membership Survey in 2002 and other feedback from the membership, it became apparent that the RIPE NCC was expected to provide a more local presence and offer more targeted support in various pockets of the RIPE NCC service region.

Regional meetings are a chance to establish direct contact and enhance the support the RIPE NCC provides its members at a local level. These meetings provide a forum for discussing IP networking issues relevant to a specific region.

The RIPE NCC continued to offer support for the emerging RIR, AfriNIC. During 2003, RIPE NCC representatives attended the AfriNIC start-up discussions in Johannesburg, South Africa. Two AfriNIC staff members spent six months at the RIPE NCC offices in Amsterdam to learn about the activities of the various departments and to gain experience in an established RIR.

The RIPE NCC, in conjunction with the other RIRs, has continued discussions with ICANN on the ICANN evolution process and interaction between ICANN and the RIRs.

The Number Resource Organization (NRO) was created in October 2003 by the signing of a Memorandum of Understanding (MoU) between the four RIRs. The NRO will help to foster the common approach needed for many aspects of RIR work including the creation of global addressing policies, the administration of upper level reverse DNS domains and negotiations with external entities. The NRO serves to further facilitate RIR co-ordination, to provide third parties with a convenient single point of contact for the RIR system and to act as a body capable of safeguarding the unallocated number resource pool.

ASO Address Council (AC) elections were held at the RIPE 46 Meeting in Amsterdam, the Netherlands. The three AC members from the RIPE NCC service region in 2003 were:

- Sabine Jaume-Rajaonia (RENATER, France)
- Hans Petter Holen (Tiscali AS, Norway)
- Wilfried Woeber (Vienna University, Austria)

The RIPE NCC continued to develop close working relations with traditional partners in the industry and secure new relations with organisations driving new technologies. A main goal of these efforts has been to promote the industry self-regulatory structures that have been developed over many years by the RIPE community and the RIPE NCC membership.

This approach has also proven essential in embracing non-traditional players and facilitating industry convergence. The long-standing processes that exist in the RIPE region proved to be flexible and open enough to incorporate new developments in 2003 and to secure continued support of the decentralised, open, bottom-up industry self-regulatory structure common to all RIR communities in managing Internet address resources.

## 8.0 Financial Report 2003

### Statement of Income and Expenditure 2003

in kEUR	Actual 2003	Budget 2003	Actual 2002	Difference FY03 vs. Bud FY03		Difference FY03 vs. FY02	
<b><u>Income</u></b>							
Fee	12,542	10,138	7,693	2,404	24%	4,849	63%
RIPE Meeting	290	306	221	-16	-5%	69	31%
Other income	<u>241</u>	<u>300</u>	<u>159</u>	<u>-59</u>	-20%	<u>82</u>	52%
<b>Total Income</b>	<b>13,073</b>	<b>10,744</b>	<b>8,073</b>	<b>2,329</b>		<b>5,000</b>	
<b><u>Expenditures</u></b>							
Personnel	5,660	5,911	5,530	-251	-4%	130	2%
Operational expenses	2,156	2,199	2,382	-43	-2%	-226	-9%
RIPE Meetings and LIR courses	737	595	775	142	24%	-38	-5%
Depreciation	<u>904</u>	<u>1,009</u>	<u>1,057</u>	<u>-105</u>	-10%	<u>-153</u>	-14%
<b>Subtotal expenses</b>	<b>9,457</b>	<b>9,714</b>	<b>9,744</b>	<b>-257</b>	-3%	<b>-287</b>	-3%
<b>Surplus before misc. costs &amp; financial expenses</b>	3,616	1,030	-1,671	2,586		5,287	
Miscellaneous costs	738	260	886	478	184%	-148	-17%
Financial expenses	<u>-199</u>	<u>-163</u>	<u>-188</u>	<u>-36</u>	22%	<u>-11</u>	6%
<b>Total expenses</b>	<b>9,996</b>	<b>9,811</b>	<b>10,442</b>	<b>185</b>	2%	<b>-446</b>	-4%
<b>Surplus / Deficit</b>	<b><u>3,077</u></b>	<b><u>933</u></b>	<b><u>-2,369</u></b>	<b><u>2,144</u></b>		<b><u>5,446</u></b>	

## Balance Sheet as at 31 December 2003

in kEUR	31 DECEMBER 2003	31 DECEMBER 2002
<b><u>ASSETS</u></b>		
<u>Fixed assets</u>		
Computers	346	602
Infrastructure	275	537
Office equipment	<u>139</u>	<u>186</u>
<b>Total fixed assets</b>	<b>760</b>	<b>1,325</b>
<u>Current assets</u>		
Accounts receivable	2,885	5,208
VAT	17	-18
Miscellaneous receivables	<u>624</u>	<u>654</u>
<b>Total current assets</b>	<b>3,526</b>	<b>5,844</b>
<u>Cash on hand</u>	<b>12,432</b>	<b>7,585</b>
<b>Total ASSETS</b>	<b><u>16,718</u></b>	<b><u>14,754</u></b>
 <b><u>LIABILITIES</u></b>		
<u>Capital</u>		
Reserves	477	477
Clearing House	3,733	6,102
Surplus	<u>3,077</u>	<u>-2,369</u>
<b>Total capital</b>	<b>7,287</b>	<b>4,210</b>
<u>Current liabilities</u>		
Creditors	418	36
Wage taxes & social securities	-21	89
Unearned revenues	8,287	9,197
Personnel fund	1	483
Miscellaneous payables	<u>746</u>	<u>739</u>
<b>Total current liabilities</b>	<b>9,431</b>	<b>10,544</b>
<b>Total LIABILITIES</b>	<b><u>16,718</u></b>	<b><u>14,754</u></b>

## Notes to the RIPE NCC Statement of Income and Expenditure 2003

### General

All amounts are expressed in kEUR. Foreign currencies are converted at the daily exchange rate at the date of transaction or valuation.

Historic costs have been used throughout unless otherwise stated.

The year 2003 resulted in a surplus of 3,077 kEUR. This surplus was a result of the increase in income in 2003 and the control of expenses. This surplus has completely replenished the deficit of 2002. Moreover it adds to the RIPE NCC reserves and pushes the reserves to the highest level in the history of the RIPE NCC. These reserves guarantee the financial stability and the continuity of RIPE NCC operations.

### Revenues

Revenues rose by more than 60% due to increased fees and a higher than expected new membership growth. Both of these factors had a similar effect on the revenues of about 2,400 kEUR each. The total number of members increased to a level of 3,488 (as compared to 3,269 in 2002). The total new members applying for membership was 548 in 2003. Due to non-paying members, closed members and "never" starters the net growth for 2003 was 219 members which represents a 6% net increase from 2002. In 2003, 220 kEUR of the sign-up fee has been accounted for in the revenue while in previous years the sign-up fee was accounted in the revenue for the future year. A growth in RIPE Meeting attendees led to an increased income for RIPE Meetings. Other income contains TTM membership fees and delayed payments for previous years of written off accounts.

### Expenditures

Total expenditure in 2003 was 3% less than total expenditure in 2002. The main reason for the decrease in expenditure was a decrease in purchases, and the resulting decrease in operating expenses and depreciation costs of fixed assets. Personnel expenses were below budget and just 2% above 2002. This is due to a reduction in staff during the year 2003. In January 2003 the RIPE NCC held around 100 FTEs while, by the end of the year, this number decreased to 93 FTEs. The total number of FTEs in 2003 was 97.4 FTEs versus 99.0 FTEs in 2002. In 2003 expenses for LIR courses were 228 kEUR and expenses for RIPE Meetings were 509 kEUR.

Miscellaneous expenses consist of bad debts and Personnel Fund expenses. Bad debts were up from 2002 as we had approximately 250 non-paying members with higher average fees. No deposit to the Personnel Fund had to be made as the staff level for the Personnel Fund expenses was on the same level as 2002. Financial expenses were down as a result of lower bank charges, due to the fact that, within the EU, the internal transfer fees have decreased since mid-2003. The interest income remained on the same level as the interest rate declined slightly but the funds set out were higher than 2002.

## Notes to the RIPE NCC Balance Sheet as per 31 December 2003

### General information

All amounts are expressed in kEUR. Foreign currencies are converted at the daily exchange rate at the date of transaction or valuation. Historic costs have been used throughout unless otherwise stated.

<b>Fixed Assets</b>	Computer	Infrastructure	Office Furniture
Book value 1/1/2003	602	537	186
Purchase costs	283	48	7
Depreciation	539	310	54
<b>Book value 31/12/2003</b>	<b>346</b>	<b>275</b>	<b>139</b>

**Assets** are valued at historical costs and are depreciated on a straight-line basis, starting in the month after acquisition. Computers, including activated software, are written off in two years. Infrastructure is written off in three years and office furniture and equipment in five years. All items under EUR 1,000 are expensed.

### Current Assets

Accounts receivable decreased in comparison with 31 December 2002 due to the fact that the payment behaviour of the LIR membership has improved. Therefore on 31 December 2003 approximately 70% of payments had already been collected versus approximately 60% on 31 December 2002. Another declining factor was the decrease in membership fees for 2004. In 2003 suspense accounts are stated under accounts receivable while in 2002 suspense accounts were stated under miscellaneous payable. As a result, the balance total for 2002 has been decreased by 35 kEUR. Suspense accounts are payments received from debtors of which the origin of the payment is not yet clear. In 2003 miscellaneous debtors are stated under accounts receivable therefore the miscellaneous receivables and accounts receivable figures for 2002 have been amended by 69 kEUR.

Miscellaneous Receivables	31/12/2003	31/12/2002
Prepaid	488	484
Miscellaneous receivables	136	170
<b>Total miscellaneous receivables</b>	<b>624</b>	<b>654</b>

### Capital

Until 1998, surpluses were accumulated in the RIPE NCC reserves. In 1998, the RIPE NCC agreed with the Dutch tax authorities on a tax ruling that allows surpluses to be put into a Clearing House. All yearly surpluses since 1998 have been allocated to the Clearing House. Currently the RIPE NCC is in discussion with the Dutch tax authorities to review the current procedure to administer the loss incurred in 2002 and to simplify the Clearing House administration in general.

### Current Liabilities

#### Unearned Revenues

The unearned revenues consist of invoices sent in the financial reporting year but pertaining to the following accounting year. The decrease in LIR membership fees for the year 2004 has resulted in a moderate decrease of the unearned revenue balance.

Wage Taxes and Social Securities	31/12/2003	31/12/2002
Wage taxes	24	59
Social securities	-45	30
<b>Total wage taxes and social securities</b>	<b>-21</b>	<b>89</b>

Due to the decrease in the number of staff in 2003 the RIPE NCC has a claim outstanding with the Dutch social security office.

Miscellaneous Payable	31/12/2003	31/12/2002
Accrued expenses	564	573
Accrued holiday payment	156	170
Other payables	26	-4
<b>Total miscellaneous payable</b>	<b>746</b>	<b>739</b>

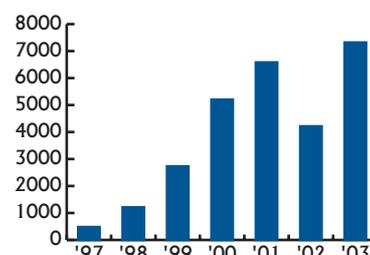
As a result of the positive development of the exchange rate between the Euro and the US Dollar, the total accrued for ICANN decreased on 31 December 2003 versus 2002. The accrued holiday allowance decreased as a result of the decrease in the number of staff.

### Items Not Shown in Balance Sheet

The RIPE NCC rents office space in two buildings and has four separate rental agreements for these. Four bank guarantees have been issued for an amount of 135 kEUR to cover the rent of the office space in Amsterdam.

**Prepayments** include rent, equipment, pension, health and deposits for RIPE Meeting venues. Other receivables consist of interest receivable, fees to be received, payments in transit and long-term receivables.

Capital Development



# HORLINGS, BROUWER & HORLINGS

Accountants, Belastingadviseurs & Consultants



## Auditor's Report

To the General Meeting and  
Executive Board of the  
RIPE NCC Association  
Singel 258  
1016 AB Amsterdam

### Introduction

We have audited the financial statements of Réseaux IP Européens Network Coordination Centre (RIPE NCC), Amsterdam, for the year 2003. These financial statements are the responsibility of the management of the association. Our responsibility is to express an opinion on these financial statements based on our audit.

### Scope

We conducted our audit in accordance with auditing standards generally accepted in the Netherlands. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audit provides a reasonable basis for our opinion.

### Opinion

In our opinion, the financial statements give a true and fair view of the financial position of the association as at 31 December 2003 and of the result for the year then ended in accordance with accounting principles accepted in the Netherlands.

Amsterdam, 16 March 2004

A handwritten signature in black ink, consisting of a vertical line on the left and a long horizontal line extending to the right, with some smaller scribbles below the vertical line.

M.H.P. van Winsen  
Registeraccountant

www.ripe.net

RIPE NETWORK COORDINATION CENTRE ANNUAL REPORT 2003