



MEMBER UPDATE

UPDATE FROM THE RIPE NCC MANAGING DIRECTOR

As we approach RIPE 66, where the RIPE community will come together to share ideas, experiences, and work towards the improvement of the Internet, it has been refreshing to see the elevated level of activity taking place on the mailing lists recently, which I believe is indicative of two things. First, it shows that we have an active and engaged community and, second, that we live in very interesting times with a number of unique challenges facing network operators – not least of which being IPv4 exhaustion and the challenge of a smooth and timely IPv6 deployment.

And yet for all this, I am often talking with members who voice concerns about the lack of policy in certain areas, or the need for a specific policy to change – but these same members are mysteriously absent from the RIPE Policy Development Process and are nowhere to be found on the mailing lists. For the RIPE NCC, where everything is premised on the success of the open and inclusive multi-stakeholder approach, this is a concern.

This year, the RIPE NCC welcomed our 9,000th member. We need to ensure that we are doing everything we can to draw as many of these 9,000 into becoming active and contributing members of the community. There will always be those who do not want to get involved. However, if there is a certain portion of members who are otherwise engaged with Internet issues, but are somehow either uninformed or put-off by the complexity of the Policy Development Process, then perhaps it is time to consider what it is about our outreach activities or the process itself that can be improved.

The fact that it can seem daunting for a newcomer to propose a policy has long been understood. This is why the RIPE NCC has resources available to facilitate the process, including a Policy Development Officer who can offer advice on the process, assist with the preparation of initial policy text and can put members in touch with the right people in the community. Additionally, the RIPE Working Group Chairs are always eager to help newcomers.

Please take a moment to think about this. How can we ensure the RIPE Policy Development Process is working for all of our members and the wider technical community? Are mailing lists still the best vehicle to host these discussions? You can let us know your thoughts by emailing feedback@ripe.net.

And speaking of letting us know your thoughts, please keep an eye out for the RIPE NCC Survey 2013, which kicks-off on 17 May. This survey is a vital tool that we use to answer some of the big questions about what the membership and community wants to see from the RIPE NCC over the coming years. It's important to ensure that we have your opinion.



Axel Pawlik
RIPE NCC Managing Director



Contents

- 2 - Redevelopment of RIPE Database Software
- 2 - RIPE Database Proxy Service
- 3 - Training Update
- 4 - RIPE NCC Survey 2013
- 4 - Update on the RIPE NCC's Court Case
- 5 - RIPE NCC General Meeting 2013
- 5 - IPv4 Transfers
- 5 - WTPF-13: The ITU Saga Continues
- 6 - RIPE Atlas Update
- 7 - IPv6 Developments
- 8 - Annual Report
- 8 - Regional Meetings
- 8 - Upcoming Meetings

Redevelopment of RIPE Database Software

We were proud to announce recently that we replaced the legacy RIPE Database software with a new code-base that has been built from scratch.

The old code had been in production since 2001, and made fixing bugs and adding new features time consuming and a drain on resources. With the new code in place, we now have more flexibility to incorporate features the community has been asking for. We can better support the complex technical requirements involved in the implementation of RIPE Policies, and we will be able to respond much faster to change requests and bug fixes.

All Open Source Code

All of the new RIPE Database code is open source. Anyone can run a local copy of the RIPE Database using dummy data dumps containing all RIPE Database data except for personal information. People can also use the software to run their own routing registry.

A lot of the modules in the new code can be reused for other projects, such as a very high performance in-memory IP address tree that can handle different searches very quickly on a huge dataset. There is also a very efficient mail-processing engine and the network pipeline can do IP accounting for tens of thousands of queries per minute distributed over a cluster of machines.

Introduction of “abuse-c:”

We are now at the first phase of implementing ripe-563, “Abuse Contact

Management in the RIPE Database”. In this phase, all of the RIPE NCC’s allocated addresses and their less specifics will be covered by an abuse contact email. The second phase, beginning in Q4 of this year, will cover assigned PI space.

History of Objects

As the RIPE NCC proposed back in March, users of the RIPE Database can now see the history of changes applied to each database object, and can look up any previous version of any given object, except for the “Person” and “Role” objects that contain personal data.

New API

We have also re-implemented our API from scratch. Now the API calls are handled directly from the RIPE Database core code, instead of being parsed back to RPSL objects. This makes the API calls much faster, and with streaming of the output, the experience of using the API is the same as using traditional query or update interfaces. The new API code is also self-documenting, which means that the syntax definitions and schemas are auto-generated, which makes life for developers much easier.

Object Tags

We have also proposed another feature called object tags. These contain operational data about objects in the RIPE Database. Although hidden by default on port 43 queries, users can always enable them and filter the generated output

based on available tags. For example, all placeholder objects (like 0/0 objects) will be tagged as “PLACEHOLDER” and all resources from the RIPE NCC service region can be tagged with the “RIPE” tag. This feature will provide a lot of help for data clean-up, as well as fine tuning search results.

What’s Coming Up

Moving forward, our main focus will be on integrating RIPE Database Authentication with RIPE NCC Access, the RIPE NCC’s single sign-on system. We are also planning on streamlining our web-based tools, taking out LIR object editors from the LIR Portal, and providing all update functionality to the RIPE Database through mechanisms including web updates, sync updates, email updates, and Update APIs.

We also have major plans for improving the Global Resource Service (GRS) to provide a truly global number resource whois service. In partnership with APNIC, we are also rolling out an implementation for the Registration Data Access Protocol (RDAP) that has been developed by the IETF’s Web Extensible Internet Registration Data Service (WEIRDS) Working Group.

Finally, we are working on streamlining all of the RIPE Database documentation. We will provide three document sets – one for queries, one for updates and one for developers. These documents, which will be linked to the latest version of our production code, will be concise and focused on real-world use cases.

RIPE Database Proxy Service

The RIPE Database Proxy Service allows websites to provide a third party interface to the RIPE Database, without running into the limits set on database queries that include personal information. With the proxy service, the RIPE NCC whitelists the IP address of the third party and instead applies the query limits to its users. It is important to note that the proxy service was not created to enhance the accessibility of the registry, but as an additional service for third parties to provide to their customers. The RIPE Database remains open and accessible for everyone at all times.

In December 2012, the RIPE NCC announced that it would be

making the RIPE Database Proxy Service a member-only service. With only four users (one of whom was a member), as well as legal requirements relating to data protection, this was considered to be the best option at the time.

However, following the announcement, the RIPE community objected to the decision, while expressing its disappointment with the lack of prior consultation.

In response, in January 2013 the RIPE NCC announced that the decision would be postponed until the community could properly

discuss the issue. The RIPE NCC put forward three options for the community to consider:

- Make it a member-only service
- Keep the service free for now, but bound by a contract
- Discontinue the service

Based on the feedback received during the discussion period, the

RIPE NCC Executive Board decided on the second option – the RIPE NCC will continue to offer the RIPE Database Proxy Service as a free service, but will require a contract to be in place. The Executive Board reached this decision because there were very low costs associated with the service, and they could not see a strong argument for it to be discontinued. They agreed that this will be reviewed in future, and they plan to do this for all RIPE NCC services and activities.

Training Update

New RIPE Database Course

The RIPE NCC recently launched our new RIPE Database Training Course. Survey feedback had shown the RIPE Database to be one of the most popular topics covered by our training, and this was further supported by how quickly our RIPE Database Webinars were filling up after being announced.

In this monthly course, experts from the RIPE NCC will deliver practical training that covers all aspects of RIPE Database use, including:

- Querying the RIPE Database
- How to create, update and protect database objects
- Reverse delegation in the RIPE Database
- Using the RIPEstat tool to get more information from the RIPE Database

The course has been designed to include a lot of hands-on exercises and is suitable for both beginners and experienced database users. Our trainers will cover all the basics and demonstrate a range of useful tips that will assist members' daily operations.

Covering the RIPE Database in a standalone course allows us to spend less time on the database in other courses. This means more time for hands-on exercises, which is something members have been asking for.

Members can register for the course via the LIR Portal and the full outline is available here:

<https://www.ripe.net/lir-services/training/courses/rdb>

New IPv6 E-Learning Videos

The RIPE NCC provides e-learning tutorials as a free service through our website on a number of subjects, including IPv6, DNSSEC, RIPE Database and the RIPE Community. We recently added four new videos on IPv6 Transition Mechanisms, which cover:

- 6RD
- NAT64
- 6in4
- DS-Lite

We are continuing to develop this section, and in the coming months will release more e-learning solutions and tutorials, including two new videos on abuse-c: and role objects. You can find the e-learning section on our website here:

<https://www.ripe.net/lir-services/training/e-learning>

New Webinar on the Way

A fourth online training webinar launches in late May, covering IPv6 in the RIPE Database. Webinars have proven to be enormously popular with our members, particularly as they allow members to gain new skills without having to travel. The other three webinars currently on offer cover RPKI, RIPE Database and Advanced RIPE Database.



Electronic Billing Coming Soon for Members

The RIPE NCC will soon be offering electronic billing for its members as a default service. Members will be invoiced by email unless they request a hard copy through the LIR Portal, or by emailing billing@ripe.net. You will hear more from us when the new system is ready.

RIPE NCC Survey 2013

On 17 May, at the end of the RIPE 66 Meeting in Dublin, the RIPE NCC will launch the RIPE NCC Survey 2013.

This survey will be used by the RIPE NCC to assess its current service offering and to shape its strategy for the years ahead. The RIPE NCC carries out these large-scale surveys every two years. They are extremely important in finding out the views of RIPE NCC members and other stakeholders on the direction the RIPE NCC should be taking as an organisation.

An independent third party, the Oxford Internet Institute (OII), will conduct the analysis of the survey data. Any information that may identify respondents will be removed by the OII and will not be made available to the RIPE NCC or published in the report.

While the survey is available, the RIPE NCC will be offering great prizes to those who take part. Watch out for the survey announcements in May and June, and we hope you'll help spread the word and encourage your contacts to take part.

The importance of the survey can be seen in the findings and actions taken after the 2011 survey conducted by the RIPE NCC. A list of 52 actions that arose directly from the survey was taken from the results, helping the RIPE NCC to improve as an organisation and focus on the areas deemed to be important by members.

<https://www.ripe.net/lir-services/member-support/info/surveys/ripe-ncc-membership-and-stakeholder-survey-2011>

Information on all the RIPE NCC surveys that have taken place is available at:

<https://www.ripe.net/lir-services/member-support/info/surveys>

We will present the results of the RIPE NCC Survey 2013 at the RIPE 67 Meeting in Athens in October. We look forward to getting your feedback!

Update on the RIPE NCC's Court Case

Ordered to Lock Registrations

On 8 November 2011, the RIPE NCC received an order from the Dutch police to temporarily "lock" the registration of four IP address blocks within the RIPE Database. The RIPE NCC initially complied with this order, as we were of the belief that it was compulsory to do so.

The order did not affect the registrations directly. Rather, it locked the records so that no further amendments could be made. The members involved were informed that the registrations had been locked, and the RIPE NCC asked them if they wanted to formally object. None of them did.

While the RIPE NCC had initially been told that the order was compulsory, after further legal analysis the RIPE NCC reached the conclusion that there was insufficient legal grounding to execute the order, and in January 2012 we removed the temporary lock.

The RIPE NCC Goes to Court

This experience led to the RIPE NCC filing a summons against the State of the Netherlands in which we hoped to establish a legal precedent so that we could be certain of our obligations regarding such orders in future. In November 2012, the RIPE NCC appeared in court.

In February 2013, the RIPE NCC received the verdict from the court that stated our case had been dismissed as "inadmissible" on procedural grounds. This means that our legal argument was not examined, and the RIPE NCC still lacks formal instructions on what to do with such orders in future.

Re-affirming our Principles

While we are disappointed with the outcome, the RIPE NCC will not be appealing the court's decision. We believe that the investment in time and resources

this would require would outweigh the likelihood of a clear result.

We will soon be publishing a document on our website where we outline the principles that govern how we will handle such orders in future. Under these principles, the RIPE NCC:

1. Remains committed to protecting the interests of its members
2. Will only execute binding orders
3. Will judge each order on its own merits

You can find more information about the court case here:

<http://www.ripe.net/internet-coordination/news/about-ripe-ncc-and-ripe/ripe-nccs-case-against-the-state-of-the-netherlands-dismissed>

RIPE NCC General Meeting May 2013

The RIPE NCC General Meeting (GM) will take place from 15-16 May 2013 in the Burlington Hotel in Dublin.

GM Resolutions

The membership will vote on three resolutions at the GM:

- The General Meeting adopts the 2012 Financial Report of the RIPE NCC.
- The General Meeting discharges the Executive Board with regard to its actions as they appear from the Annual Report 2012.
- The General Meeting adopts the RIPE NCC Charging Scheme 2014.

The Charging Scheme 2014 continues the “one LIR, one fee” model that was introduced for 2013. The Executive Board

proposes that the fee for 2014 be EUR 1,750, plus EUR 50 for every PI assignment.

In previous years, the RIPE NCC Charging Scheme was voted on at the Autumn General Meeting. The Executive Board is putting the Charging Scheme to the membership to vote on at the Spring General Meeting in order to:

- Help members with their budgeting for the coming year
- Implement the recommendation of the RIPE NCC Charging Scheme Task Force

Voting on the Charging Scheme 2014 will take place at the GM from 15-16 May. We urge all RIPE NCC members to vote on the Charging Scheme resolutions, either in person at the GM or via electronic voting.

Executive Board Elections

An election will also take place at the GM to fill two seats on the RIPE NCC Executive Board. The three candidates standing for election are:

- James Blessing
- Remco van Mook
- Nigel Titley

Candidates will present themselves at the GM, and you can read their biographies at:

<https://www.ripe.net/lir-services/ncc/gm/may-2013/biographies>

The results of the voting will be announced at 15:45 (UTC+1) on 16 May.

IPv4 Transfers

Since reaching IPv4 exhaustion in September 2012, there has been steadily growing interest in address space transfers. At the time of writing, there have been 22 transfers of IPv4 address space in the RIPE NCC's service region this year, amounting to 230,400 transferred IP addresses.

IPv4 Transfer Brokers

How members decide to organise transfers of IPv4 address space is entirely up to them. The RIPE NCC takes no part in the process of coming to an agreement between two parties. Our only concern is ensuring that transfers follow RIPE Policies and are reflected accurately in the registry.

Some members may decide to use a broker to find an organisation offering or seeking address space and to help facilitate the process by advising on the policies

and processes that need to be followed. Whatever the case, it is important that members understand that the RIPE NCC remains neutral and will never endorse any specific broker, or even the decision to use a broker.

At the same time, the RIPE NCC recognises that there is a role we can play in encouraging good behaviour by brokers. As announced in March, brokers may sign an agreement with the RIPE NCC to be listed as Recognised IPv4 Transfer Brokers on our website. In return, they will have agreed that any transfers they facilitate will follow RIPE Policies, as well as general good practices (such as not implying that they represent the RIPE NCC).

It is important to point out that the RIPE NCC takes the stewardship of its members' information very seriously. No

broker, including those recognised by the RIPE NCC, will ever receive privileged information from us. It is also important to keep in mind that brokers who have not entered into an agreement with the RIPE NCC can also facilitate transfers.

IPv4 Transfer Statistics

Also in March, the RIPE NCC implemented the RIPE Policy proposal 2012-08, “Transparency in Address Space Transfers”, which requires the RIPE NCC to publish a list of all transfers within its service region. This information can be found on the new IPv4 Transfer Statistics Page which is updated weekly and can be found here:

<https://www.ripe.net/lir-services/resource-management/ipv4-transfers/table-of-transfers>

WTPF-13: The ITU Saga Continues

It may feel like the dust has barely settled from the International Telecommunication Union's last big event, the World Conference on International Telecommunications (WCIT) held in Dubai last December, but discussion of the ITU and its role in Internet governance has

already moved onto a new phase. The World Telecommunications/ICT Policy Forum (WTPF) is being convened in Geneva from 14-16 May 2013, and will look specifically at “international Internet-related public policy matters”.

While the WTPF is not a treaty-making (or even decision-making) forum like WCIT, it is nevertheless a significant event in the ITU calendar, and has the potential to shift the agenda of Internet governance discussions within the ITU (and governmental) context.

The WTPF has a single input document, the Secretary General's report, which includes six Opinions discussed by an Informal Experts Group at three meetings held between June 2012 and February 2013. These Opinions touch on issues including the importance of Internet Exchange Points (IXPs), IPv6 adoption, IPv4 transfers, multi-stakeholder Internet governance models and Enhanced Cooperation. The report, including the Opinions, can be downloaded at:

<http://www.itu.int/md/S13-WTPF13-C-0003/en>

The five Regional Internet Registries cooperatively developed a document responding to the issues raised in the Secretary General's report, and this was officially submitted on 29 April. This document incorporated feedback from RIPE community members, and highlighted several key points:

- There are existing governance structures

for the Internet, including the RIRs, but also specific regional, national and global coordination groups, such as peering forums, that play a vital role in promoting Internet development and resilience.

- Bottom-up policy development has been massively successful in promoting Internet growth generally, and any move toward top-down, government-led regulation (particularly to the exclusion of other Internet stakeholder groups) will endanger the growth, innovation and openness of the Internet.
- The RIRs and their peers in the Internet technical community have been particularly pro-active in answering the call to Tunis Agenda's call to "Enhanced Cooperation" between stakeholder groups, and have employed a range of strategies to engage governments, regulators, law enforcement and industry on a range of subjects. The document highlights many of these strategies, focusing particularly on cooperative IPv6 capacity building efforts.

The RIRs' submission to the WTPF is available online at:

www.ripe.net/wtpf-13-submission

While the WTPF is open to Sector Members (the RIPE NCC is a Sector Member of both the Standardization (ITU-T) and Development (ITU-D) Sectors), the agenda of the event is still primarily driven by Member States. In this context, the RIRs' submission is aimed at informing Member States as they participate in WTPF discussions, and winning support for the points outlined above.

Staff from each of the five RIRs will be on-site at the WTPF and will be available to Member States (or other Sector Members) seeking information, data or analysis on those issues related the RIRs' areas of authority.

A report on development at the WTPF will be published following the event on the RIPE NCC's website.

RIPE Atlas Update

RIPE Atlas, the RIPE NCC's active measurement network, continues to expand across the Internet, providing more and more detailed views of the Internet's connectivity and reachability in real time. The network now consists of more than 2,800 active probes in more than 100 countries, and our goal is to expand this to 6,000 probes by the end of 2013. This active network conducts 65 million measurements each day.

RIPE Atlas has had support from 16 sponsors, including as part of technology research funds. More than 6,000 RIPE Atlas users – including 2,300 RIPE NCC members – perform several hundred customised measurements each month. These measurements provide valuable information about the reachability of users' own networks and several features, such as testing your network's IPv6 reachability, are available only to RIPE NCC members.

The RIPE Atlas anchors pilot continues to expand as well, with 13 anchors – enhanced probes that serve as regional measurement targets – now in operation. A target of 50 anchors is planned by the end of the year. The next generation RIPE Atlas probe, which has the same functionality



but is more cost effective, is also now being distributed.

The RIPE Atlas website was recently redesigned and now includes better navigation and additional content, including future plans for the service, a community section for active users, and a personalised dashboard where users can get an overview of their probes, measurements and credits.

Several interesting recent analyses using RIPE Atlas data have included an investigation about how much filtering is still occurring for 128.0/16, which includes some of the last addresses that were

allocated before the RIPE NCC reached the last /8 and which should no longer be reserved as special address space. The study found that, while over 95% of the RIPE Atlas probes involved in the research could reach destinations in this range, there is still significant filtering taking place that could make network operations difficult for those LIRs that received addresses from this range.

You can see the redesigned RIPE Atlas website here:

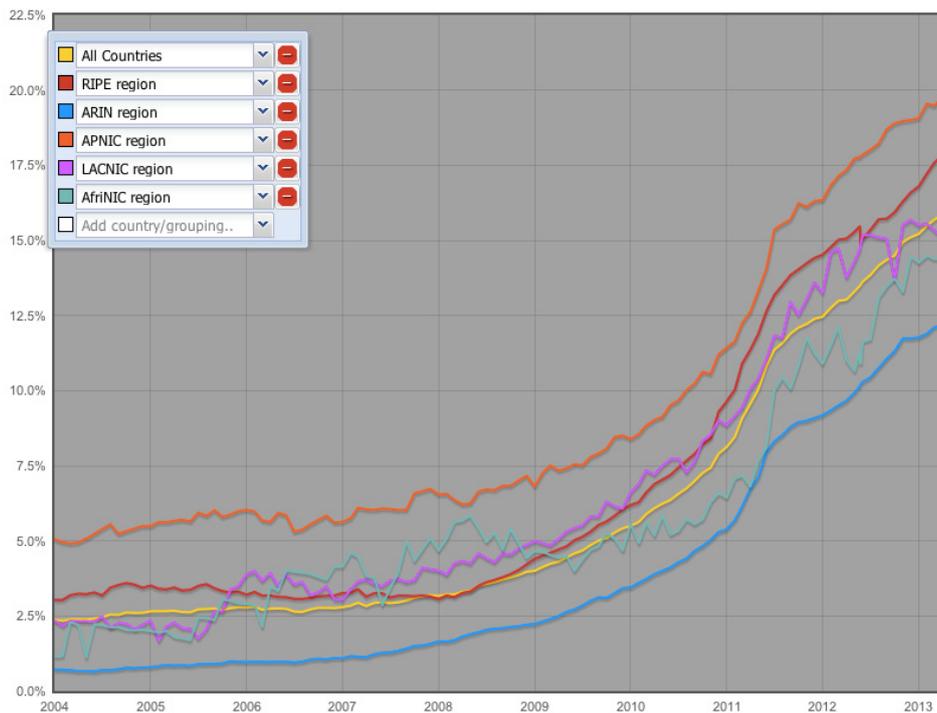
<https://atlas.ripe.net/>

IPv6 Developments

Networks with IPv6 in May

The RIPE NCC regularly checks the status of IPv6 deployment – not just in our own service region, but in others as well. One way to measure IPv6 deployment is to look at the percentage of networks (Autonomous Systems) announcing IPv6 prefixes and to follow the developments over time. The graph to the right shows the percentage of Autonomous Systems announcing IPv6 prefixes in the service regions of each Regional Internet Registry (RIR) over the past few years.

It's positive to note that the percentage of networks announcing IPv6 address space in the APNIC and RIPE NCC service regions continues to increase steadily. Both of these RIRs have already reached their last /8 of IPv4 address space (in April 2011 and September 2012 respectively).



Percentage of Networks Announcing IPv6 Prefixes Over Time

ARIN, which is projected to be the next RIR to reach IPv4 exhaustion, also shows an increasing percentage of networks announcing IPv6. On the other hand, the percentage of IPv6-enabled networks in the Lacnic and AFRINIC regions seems to have stopped growing. In fact, despite the absolute number of IPv6 enabled networks in the Lacnic service region growing since the beginning of 2013, this growth has been outpaced by the total growth of networks in the region that are visible in the global routing system. The result is a total percentage decrease from 15.5% to 15.0% for this period.

While this might not come as much of a surprise, it's good to see that in those regions where the free pool of IPv4 address has been depleted, networks are showing a steady growth in the percentage of networks that are announcing IPv6 address space.

IPv6 RIPEness

We have also seen an increase in IPv6 allocations, which can be observed in IPv6 RIPEness – which is a rating system where the RIPE NCC awards stars to its members based on indicators for their IPv6 preparedness.

By May 2013, about 61% of member LIRs had one or more stars. To get to 1-star RIPEness, an LIR must have had IPv6 address

space allocated to it. This increase in IPv6 allocations can partly be attributed to the last /8 policy, which requires LIRs to have an IPv6 allocation before they can receive their final /22 IPv4 allocation.

Following requests from the community, we have now also implemented the first prototype of a fifth IPv6 RIPEness star that is capturing real life deployment by measuring whether LIRs provide access or content over IPv6. Since the way to measure IPv6 deployment in these networks is fundamentally different, we're measuring them separately (the IPv6 access measurements are done in collaboration with APNIC which provide us with a data feed from their Google Flash advertisements experiment). If the measured IPv6 level of an LIR is above a certain threshold, it gets a fifth star assigned.

More details, including the methodology, will soon be published on RIPE Labs. There are still a number of open questions and we will want to hear your feedback!

<https://labs.ripe.net>

Annual Report

On 17 April, the RIPE NCC Annual Report 2012 was published. This commemorative Annual Report continues the theme from 2012 of celebrating “20 Years Serving the RIPE Community”. Some highlights from the report include:

- An overview of the RIPE NCC’s 20 years serving the RIPE community
- Reaching the last /8 of IPv4 address space
- Defending the bottom-up, multistakeholder model at the WTSA and WCIT
- Detailed statistics on the RIPE NCC’s allocation and assignment of Internet number resources in 2012
- The development of RIPE Atlas, RIPEstat and other measurement tools during the year
- The range of external relations and outreach activities carried

out by the RIPE NCC

- RIPE Meeting and Regional Meeting information and statistics
- The audited 2012 Financial Report of the RIPE NCC

If you wish to receive a printed copy of the report, you can choose to do so using the Communications Preferences options in your LIR Portal account before 16 May 2013. You can also email ncc@ripe.net to request a copy.

The Annual Report 2013 is available as a PDF online at:

<http://www.ripe.net/lir-services/ncc/gm/may-2013/supporting-documents/ripe-ncc-annual-report-2012>

Regional Meetings

Second South East Europe (SEE 2)/RIPE NCC Regional Meeting

The second South East Europe (SEE 2) Meeting took place in Skopje, Macedonia from 22-23 April 2013. More than 160 attendees from 13 countries attended the meeting, and the range of interesting presentations from the region and beyond helped to make this a very successful meeting.

There were also three lively panel discussions at the meeting:

- Internet Governance
- Regional IXP Update
- Starting a NOG

All the presentations from the meeting are available to download at:

<https://meetings.ripe.net/see2/presentation-upload/show.php>

At the end of the meeting, the RIPE NCC’s Chief Communications Officer, Serge Radovic, asked attendees to subscribe to the South East Europe regional mailing list.

This list was set up to allow people in the region to communicate

with each other on common areas of interest. If you’d like to subscribe, or you know someone who might be interested, see the subscription details at:

<http://www.ripe.net/mailman/listinfo/see-regional/>

MENOG 12

The 12th Middle East Network Operators Group (MENOG) meeting was held in Dubai, United Arab Emirates from 5-14 March 2013. The event received 185 attendees from 38 countries. The largest attendance yet!

MENOG 12 was noteworthy for hosting the first ever Middle East Peering Forum (MPF) on 7 March. The event brought together network operators, content providers and other stakeholders for discussions on important issues impacting the region, discussions of best practice, and to build new relationships.

All the presentations from the MENOG 12 are available for download from:

<http://www.menog.org/meetings/previous/menog-12/presentations/>

Upcoming Meetings



ENOG 5

27 - 28 May 2013

Corinthia Hotel in St Petersburg, Russia

<http://www.enog.org/meetings/enog-5/>



RIPE 67

14 - 18 October 2013

Athenaeum Intercontinental Hotel in Athens, Greece

<https://ripe67.ripe.net>