

RIPE NCC IPv6 Capacity Building Activities in Europe and Beyond

July 2012

Deployment of IPv6 addresses for networks around the world has been an issue of significant interest and concern to Internet stakeholders for more than a decade. With the supply of unused IPv4 address space now critically low, it is vital that network operators around the world, and particularly in developing regions, are aware of this issue and have access to the knowledge they need. IPv6 capacity building is the key to ensuring successful global deployment of IPv6.

Over the last several years, the **RIPE NCC** (www.ripe.net), the Regional Internet Registry (RIR) for Europe, the Middle East and parts of Central Asia, a Sector Member of the ITU T- and D-sectors and observer to the CEPT, has led a wide range of IPv6 capacity building activities, working with partners in both the private and public sectors. This document details some of those activities already undertaken, and points to new strategies and relationships that will help ensure all Internet stakeholders are prepared for and aware of the role they can play in IPv6 deployment.

With some ITU Member States seeking to introduce IPv6-related issues into the WCIT and WTSA discussions, this paper is intended to provide CEPT members with some useful background and perspectives on the current state of IPv6 activity.

Contents

- Training activities
- Working with government and the public sector
- Supporting technical and industry forums
- Providing statistics and analysis
- Supporting RIPE community initiatives
- Online resources
- Multi-stakeholder forums
- World IPv6 Launch
- Contact RIPE NCC

Training activities

Hands-on training and education is the most significant element in ensuring the successful and widespread deployment of IPv6. The RIPE NCC has provided financial, administrative and technical support to a number of programs, cooperating with its members, the RIPE community, governments and regional groups.

The **IPv6 Roadshow** is an initiative from the Middle East Network Operators Group (MENOG) and the RIPE NCC that brings together international technical trainers and local government and enterprise network operators for 3-5 day practical workshops. Launched in 2010 and delivered to public sector participants free of charge, 11 IPv6 Roadshow events have been held in eight countries throughout the Middle East, with plans for further events throughout 2012-2013. They build on the IPv6 workshops that the RIPE NCC has been delivering as part of MENOG meetings since the initial event in 2008 (held alongside the RIPE 57 Meeting). The RIPE NCC is also investigating opportunities to launch an IPv6 Roadshow program in the Commonwealth of Independent States (CIS) region.

<http://www.menog.net/IPv6-roadshow>

In addition, the RIPE NCC is coordinating with technical experts and trainers in several regions to roll out a "**Train the Trainer**" program. This will prepare teams of local trainers to spread the technical knowledge required to build and operate IPv6 networks far beyond what might be achieved by the RIPE NCC alone.

Meanwhile, **RIPE NCC Training Services** has been delivering a dedicated "IPv6 For LIRs" course since 2009, free for RIPE NCC members. Over 100 courses have been delivered to more than 2,000 technical and administrative staff.

<https://www.ripe.net/lir-services/training/courses/ipv6>

Members of RIPE NCC staff also conduct outreach to universities in the RIPE NCC service region, helping to ensure that tertiary courses are incorporating the latest developments in policy and technology.

Working with government and the public sector

Government and public sector institutions have a key role to play in promoting the adoption of IPv6, and governments around the world have adopted a range of strategies and programs. The RIPE NCC has been proactive in bringing together representatives from government, the Internet technical community, regulators and law enforcement agencies in a several fora.

RIPE NCC Roundtable Meetings for Governments and Regulators

(<https://www.ripe.net/ripe/meetings/roundtable>) have been held regularly since 2005, providing governments with an invite-only session for information sharing on issues including IPv6 deployment. Government and public sector staff who would like to take part in future RIPE NCC Roundtable Meetings are invited to send an email to roundtable@ripe.net.

The **RIPE Cooperation Working Group** (<https://www.ripe.net/ripe/groups/wg/coop>) provides an open forum to explore government-related issues further, and has regularly included

presentations from government participants on their national IPv6 strategies. The Cooperation Working Group holds discussions on an open, publicly archived mailing list and meets at each RIPE Meeting.

In addition, the RIPE NCC has provided technical advice and expertise to government-led national IPv6 initiatives, task forces and meetings in countries including Norway, Germany, Netherlands, United Kingdom, Sweden, Qatar, Moldova, Belgium, UAE, Lebanon and Saudi Arabia. We welcome the opportunity to work further with these countries and others over the coming years.

Finally, the RIPE NCC has worked closely with Law Enforcement Agencies (LEAs) to build understanding of the security and registration issues relating to IPv6 deployment. This work has included targeted training sessions and regular **RIPE NCC LEA Meetings** alongside security industry events.

Supporting technical and industry forums

Raising awareness of IPv6 among all Internet stakeholders has been a priority for the RIPE NCC for many years. RIPE NCC staff and RIPE community representatives attend technical and non-technical events and conferences around the world to talk about the urgent need for IPv6 deployment for every kind of Internet stakeholder.

The RIPE NCC has also been instrumental in helping to establish two major new Network Operators' Groups (NOGs) in recent years: the **Middle East Network Operators Group (MENOG, www.menog.net)** and the **Eurasian Network Operators Group (ENOG, www.enog.org)**. These groups are important fora for sharing knowledge and expertise and facilitate the cooperation necessary to address specific local, national and regional concerns or issues. They are also an invaluable opportunity for local communities to build relationships with Internet experts and colleagues from around the world.

By contributing financial, technical and administrative expertise vital to developing and maintaining these organisations, the RIPE NCC is helping to ensure that network operators in some of the most rapidly growing parts of our service region have the opportunity to build expertise and experience through education, information sharing and professional networking.

RIPE NCC Regional Meetings also serve as important opportunities to bring together operators and other stakeholders in the **Russian region**, the **Middle East** and **South-East Europe** and allow them to meet with RIPE NCC staff, international experts and local peers about IPv6, whether through case studies, statistics, regional updates or hands-on workshops.

Providing statistics and analysis

Accurate statistics and in-depth analysis are key to developing IPv6 strategy in both the public and private sector. This is another area where the RIPE NCC has taken strong initiatives, both independently and with partner institutions.

The RIPE NCC has developed several publicly available tools that can be used to determine the progress of IPv6 deployment in countries, sectors or other groupings. **IPv6 RIPv6ness** (<http://ipv6ripeness.ripe.net/>) measures the IPv6 preparedness of RIPE NCC members, while our study of **IPv6 Enabled Networks** (<http://v6asns.ripe.net/v/6>) provides insight into IPv6 deployment over time. More information on these and many other IPv6 measurement and analysis projects is available on RIPE Labs (<https://labs.ripe.net/>).

The **Global IPv6 Deployment Monitoring Survey** has been held annually since 2009. Initially backed by the European Commission, it has been developed by GNKS Consult in collaboration with TNO and the RIPE NCC, with input from the RIPE community. This survey provides an insight into Internet community readiness and attitudes to IPv6 deployment.

Data and analysis from each of the annual surveys is available on the website of the **Number Resource Organization (NRO)**:

<http://www.nro.net/ipv6>

Supporting RIPE community initiatives

The RIPE community is an open forum of people interested in IP address policy, and an important source of knowledge and technical cooperation. As the secretariat for RIPE, the RIPE NCC has facilitated community-led initiatives such as the RIPE Document "**Requirements For IPv6 in ICT Equipment**", a document that provides government and large enterprise stakeholders with specific information to assist them in producing requests for proposals (RFPs) that include IPv6-compatibility.

"Requirements For IPv6 in ICT Equipment" can be viewed at:

<https://www.ripe.net/ripe/docs/ipv6-in-ict>

The **IPv6 CPE (Customer Premises Equipment) Survey** is another community project coordinated by the RIPE NCC, which aims to identify the status of various CPEs in terms of IPv6 compatibility, specifically comparing company claims with real-world user experiences:

<https://labs.ripe.net/Members/mirjam/ipv6-cpe-surveys>

Online resources

The RIPE NCC maintains several online resources that provide a range of information for Internet stakeholders wanting to learn about IPv6.

IPv6 Act Now (www.ipv6actnow.org) was first published in 2009 as a general resource for all Internet stakeholders seeking relevant information on IPv6. Alongside up-to-date statistics, presentations given at events, news and links, it includes a "How To Act Now" section, outlining the steps that different stakeholder groups can take in deploying IPv6.

RIPE Labs (<https://labs.ripe.net/>) is a community platform for network operators, developers and industry experts to present, test and discuss innovative Internet-related tools, ideas and analysis. Users can browse the wide range of IPv6-related RIPE Labs articles and content at: <https://labs.ripe.net/search?Subject=IPv6>

Multi-stakeholder forums

The deployment of IPv6 is an issue that reaches far beyond the Internet technical community. The RIPE NCC - often working with the other RIRs under the umbrella of the NRO - has played a prominent role in the promotion of multi-stakeholder Internet governance events and forums over the past decade. Through these forums, the RIPE NCC has sought to educate and engage all Internet stakeholders in discussing IPv6-related issues. Find out more about the regional efforts undertaken by each RIR and coordinated global efforts at: <http://www.nro.net/ipv6>

Beginning with the second **Internet Governance Forum (IGF)** event held in Rio de Janeiro in 2007, the NRO has helped organise workshops and dedicated sessions at each IGF to examine the global progress of IPv6 adoption, and its implications for all Internet stakeholders. The RIPE NCC has also been active in promoting IPv6 awareness at regional and national Internet governance events, including **EuroDIG** and the **Arab IGF** (the first Arab IGF is scheduled to take place in October 2012).

In addition, RIPE NCC staff and members of the RIPE community have been active participants in discussions with the **OECD** and **ITU**, providing expertise, information and statistics to aid in the development of effective government strategies and policy in relation to IPv6. The RIPE NCC was also an active contributor to the ITU's IPv6 Group, which recently concluded its work by recognising the important cooperative efforts being undertaken by the Internet technical community and the public sector, particularly in emerging economies.

World IPv6 Launch

World IPv6 Launch was a global event that took place on 6 June 2012, bringing together thousands of leading Internet organisations and businesses, ranging from Google to Deutsche Telekom, in permanently enabling IPv6. The event built on the success of **World IPv6 Day**, which was held on 8 June 2011, and also celebrated the successful collaboration and contributions of the multi-stakeholder community to safeguarding the future growth of the Internet.

The RIPE NCC took an active role in World IPv6 Launch, including:

- Co-organising an event with the University of Amsterdam on the day itself, briefing local and international press, monitoring Internet data and providing real-time information and analysis. (<http://www.ripe.net/internet-coordination/press-centre/world-ipv6-launch-takes-centre-stage-at-amsterdams-science-park>)

- Collection and analysis of Internet data in the period leading up to and following 6 June 2012. Some results of this analysis have already been published on the RIPE Labs website:
 - o World IPv6 Launch - RIPEstat Case Studies
 - o First Measurement Results from IPv6 Launch
 - o Measuring World IPv6 Launch Participants From All Over The World
 - o RIPEstat DNS Widget for World IPv6 Launch

These articles can be found at:

<https://labs.ripe.net/ipv6launch>

More information on the RIPE NCC's involvement in the World IPv6 Launch is available at:

<http://www.ripe.net/ipv6launch>

Contact RIPE NCC

The RIPE NCC is keen to build relationships with all Internet stakeholders, including governments, regulators, law enforcement, industry and academe, and explore possibilities for IPv6 capacity building and awareness raising.

We encourage all stakeholders to contact the following RIPE NCC staff members with any questions regarding our IPv6-related activities or proposals for collaborative projects and events.

You can contact the RIPE NCC at ipv6actnow@ripe.net. Specific requests or questions can also be sent directly to:

Paul Rendek

Director of External Relations

rendek@ripe.net

Chris Buckridge

External Relations Officer

chrisb@ripe.net

Susannah Gray

Communications Specialist

susannah@ripe.net

Learn more about:

- The RIPE NCC: <https://www.ripe.net/lir-services/ncc>
- The RIPE community: <https://www.ripe.net/ripe>
- RIPE Meetings: <https://www.ripe.net/ripe/meetings>