RIPE NCC
RIPE NETWORK COORDINATION CENTRE

Annual Report 2020

TABLE OF CONTENTS

WELCOME TO THE 2020 RIPE NCC ANNUAL REPORT

HANS PETTER HOLEN,
MANAGING DIRECTOR

2020 was an unprecedented year in many ways and it was also my first year as Managing Director of the RIPE NCC. Having been RIPE Chair for five years and a RIPE NCC member for much longer, this position is one that gives me the opportunity to see from a new perspective what exactly we are doing to serve our community and how we need to go about the job of running a Regional Internet Registry for our members.

As the world went into lockdown and our lives moved online, there was a sharp increase in Internet traffic. This emphasised clearly the importance of the role we play at the heart of the Internet, together with everyone involved in keeping the core Internet infrastructure running. The Internet has proven to be resilient and has been a lifeline to everyone in these difficult times. This in itself is a testament to the efforts put in over decades to build a strong, scalable network.

At the RIPE NCC, we managed to transition to working remotely quite quickly. We aimed to maintain the same standard of service quality, and our staff rose to the occasion, despite often working in less-than-ideal situations. In this regard, we are no different from our members, and ensuring we were able to maintain our services for them was our main goal last year. In the pages of this report, you'll see many of the staff who have delivered on our commitments in 2020, and I want to say how impressed I am not only with their work but also how they have welcomed me as a colleague.

As part of adapting to the new situation and maintaining our engagement with members and stakeholders, we hosted two fully virtual RIPE Meetings, adapted all of our training courses into webinars and started a new online meeting format – the RIPE NCC Open House sessions. Keeping connections open and enabling our community to connect with each other is essential, and we will make sure we continue to engage effectively regardless of external factors.

2020 was our first full year since IPv4 run-out and the move to issuing /24s of IPv4 address space based on a waiting list system. In this new situation, we have been very much focused on ensuring our members' resources are secure and that we have resiliency around the registry functions, including RPKI. This is critical work for the Internet and will continue to be a focus for us in the years ahead. We also worked to improve our due diligence in several areas and to be compliant with regulations that impact us in order to safeguard the registry and the resources it holds.

I was fortunate to arrive at the RIPE NCC in time for the tenth anniversary of RIPE Atlas, which for a decade has provided excellent measurements on Internet connectivity and given insight to users about their own networks. Together with RIPEstat and RIS, this service is key to our information services and to providing tools to stakeholders that they can use to carry out valuable research and improve their operations. And while we celebrated ten years of one service, we also celebrated the launch of our RIPE NCC Certified Professionals programme. Now our members can take certified exams that lets them demonstrate their skills to networking professionals.

Another less visible aspect of 2020 that I have devoted much time to is the organisational sustainability of the RIPE NCC. We moved to a self-managing structure called Holacracy in 2018, and one of my first tasks has been to ensure that this structure fits well with the needs of our staff and our responsibility to effectively run the registry.

Above all, we've continued to focus on our core mission – to deliver world-class services to maintain the resilience and stability of the Internet. We've highlighted our key achievements in this report and I hope that it will give you a clear overview of what we've been doing for you this year.

VIEW FROM THE RIPE NCC EXECUTIVE BOARD

What a year it's been, and not just for us on the Executive Board! The biggest challenge for us was adapting to the COVID-19 pandemic, and supporting the RIPE NCC management in ensuring the safety and well-being of staff, and continuity of services to members. We did our best to help our members go through this difficult time by allowing a three-month payment extension and increasing the number of online services we offer.

This was in addition to our existing efforts to mitigate the impact of IPv4 runout, ensure a smooth transition in leadership, navigate a complicated geopolitical context, and reinforce our internal processes and due diligence to better serve our members.

One year after IPv4 runout, we can see the impact of LIR consolidation on our membership numbers. This was expected and we are financially prepared for this situation. Now more than ever, we need to encourage the transition to IPv6 and a slight uptake in numbers is a positive step in this direction.

We also worked closely with authorities and partners in the Netherlands to find a working solution with regards to the EU sanctions, affecting some of our members in Syria and Iran. In the end, we reached a sound compromise due to the essential nature of the services we provide in those countries.

In March, we welcomed Hans Petter Holen as the Managing Director of the RIPE NCC, succeeding Axel Pawlik. Hans Petter has a deep knowledge of the RIPE community, having chaired it for so many years, and has a clear grasp of what is needed to respond to the challenges facing the organisation. Together we started work on our five-year strategy roadmap for 2021-2025.

The month of May saw a contentious Executive Board election with many inappropriate messages sent to the members-discuss mailing list. We encourage open and constructive discussions, but were compelled to put the mailing list under moderation to prevent further abuse. However, an unmoderated archive of the mailing list is also available on ripe.net for transparency purposes. An Executive Board Election Task Force was formed to recommend improvements to the current election process. They handed in their report before the October General Meeting and all of their recommendations were adopted by the membership, and will be implemented for the next elections in May 2021.

During the same month, the RIPE NCC kicked off its RPKI resilience plan to ensure an RPKI Trust Anchor and Certificate Authority that is secure, reliable and highly available. This is an important step towards a more secure Internet routing and we're happy to see RPKI gaining momentum across the globe.

Finally, the year ended with two virtual Roundtable meetings for governments and regulators: one in the Middle East, and one in Eastern Europe, Caucasus and Central Asia. In 2020, we stepped up with stakeholders across the region to promote our governance model and protect the core infrastructure of the Internet.

CHRISTIAN KAUFMANN
CHAIR

ONDŘEJ FILIP
TREASURER

PIOTR STRZYŻEWSKI
SECRETARY

REMCO VAN MOOK

MARIA HÄLL

FALK VON BORNSTAEDT

RAYMOND JETTEN

HIGHLIGHTS OF THE YEAR

JANUARY

- Roundtable meeting in Brussels
  Read more

FEBRUARY

- Revamped RIPE NCC Academy goes live
  Read more

MARCH

- First lockdown. The Amsterdam office closes, all events are postponed, and we start working remotely.
- Hans Petter Holen appointed as RIPE NCC's new Managing Director
  Read more

APRIL

- Launch of RIPE NCC Certified Professionals
  Read more
- RIPE NCC Country Report: Southeast Europe published
  Read more

MAY

- RIPE 80 Read more
- RPKI Resiliency Project kicked off
  Read more

JUNE

- Results from the first virtual Hackathon Read more
- RIPE NCC::Educa IPv6-only
  Read more
- First RIPE NCC Open House
  Read more

JULY

- New RIPE Chair and Vice Chair announced: Mirjam Kühne and Niall O'Reilly
  Read more

AUGUST

- IPv6 Fundamentals - Analyst exam is live
  Read more

SEPTEMBER

- MENOG 20 Read more
- RIPE NCC Internet Country Report: Central Asia
  Read more

OCTOBER

- RIPE 81
  Read more
- Launch of RIPEstat new UI
  Read more

NOVEMBER

- ENOG 17
  Read more
- 10 Years of RIPE Atlas celebrated
  Read more

DECEMBER

- Government roundtables for Eastern Europe, the Caucasus and Central Asia, and for the Middle East
  Read more
- RIPE NCC Internet Country Report: Gulf Region published
  Read more

MEMBERSHIP OVERVIEW

All numbers are as of 31 December 2020. Please note that one member can hold more than one LIR.

23,569
Total number of active LIRs

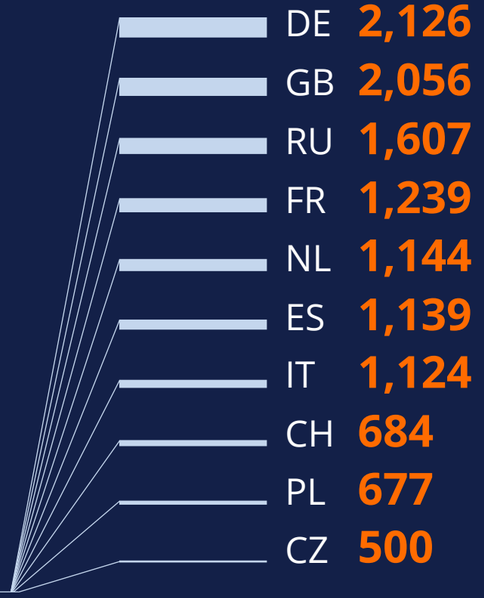
1,295
New LIRs

112
Member countries

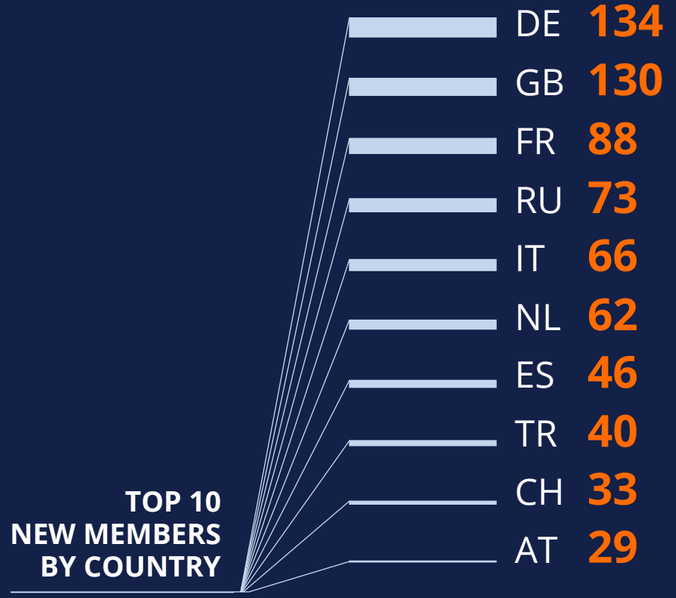
19,843
Total number of active members

15,917
Members with an IPv6 allocation

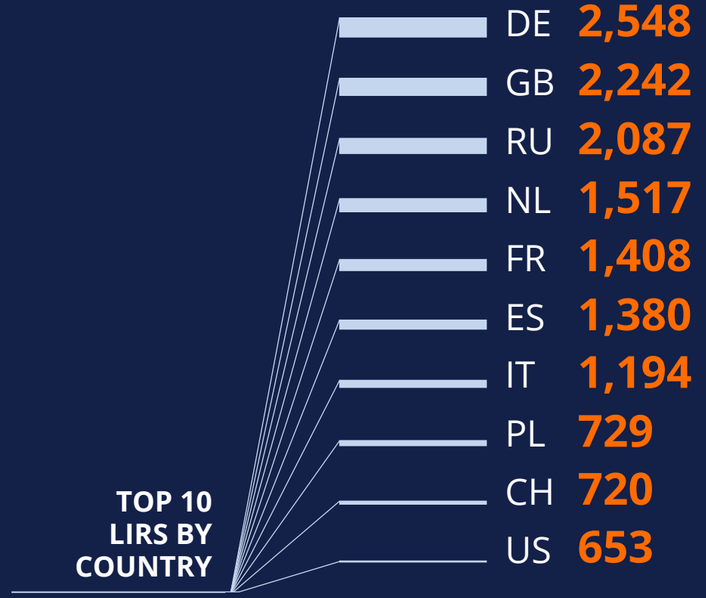
TOP 10 MEMBERS BY COUNTRY



TOP 10 NEW MEMBERS BY COUNTRY



TOP 10 LIRS BY COUNTRY



THE REGISTRY

THE IPv4 RUN-OUT – ONE YEAR ON

Back in November 2019, we announced that our pool of IPv4 addresses was exhausted. We have been anticipating and warning of this for a long time (since the late 1980s), so it was not a huge surprise when it happened. One year on, we observed a slow but steady IPv6 uptake with 68 percent of Local Internet Registry accounts holding IPv6 addresses and 50 IPv6 allocations per week, rising to 80 during busier periods. Parallel to that, we've continued to make single /24 allocations to LIRs that have never received IPv4 resources from the RIPE NCC via our IPv4 Waiting List. Since January 2020, the waiting time has been consistently under one day.

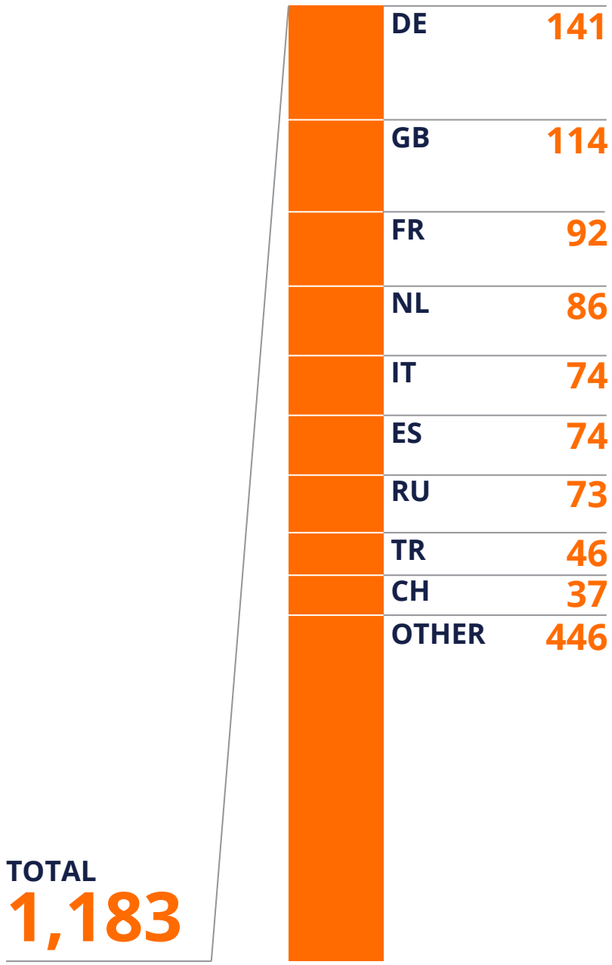
There is still a long way to go before IPv6 becomes the dominant protocol and we don't know when exactly those scales will shift for everyone. What we do know is that IPv6's extended address space is the only way to support the ever-growing Internet - something IPv4 simply no longer has the capacity to support. We can expect to see more ISPs, content providers and national governments wake up to this in 2021.

READ MORE

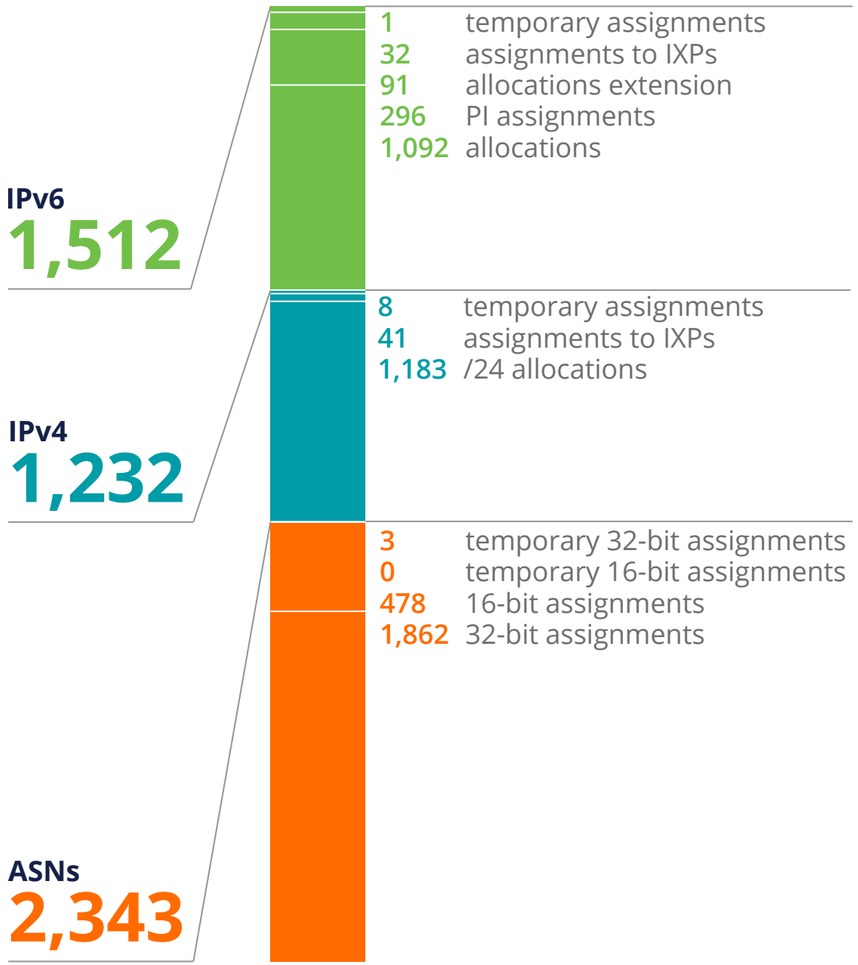
INTERNET NUMBER RESOURCES OVERVIEW

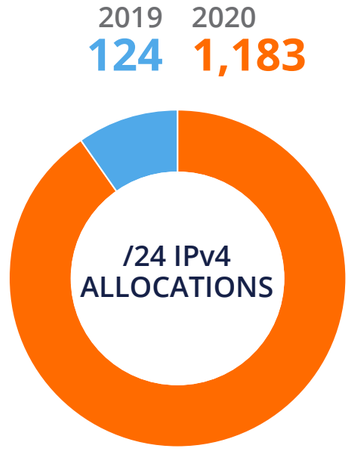
All numbers are as of 31 December 2020. Please note that one member can hold more than one LIR.

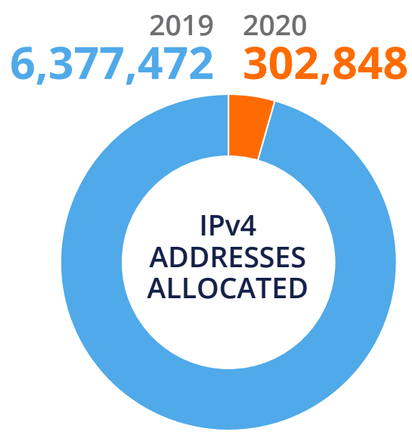
IPV4 /24 ALLOCATIONS BY COUNTRY



ALLOCATIONS AND ASSIGNMENT



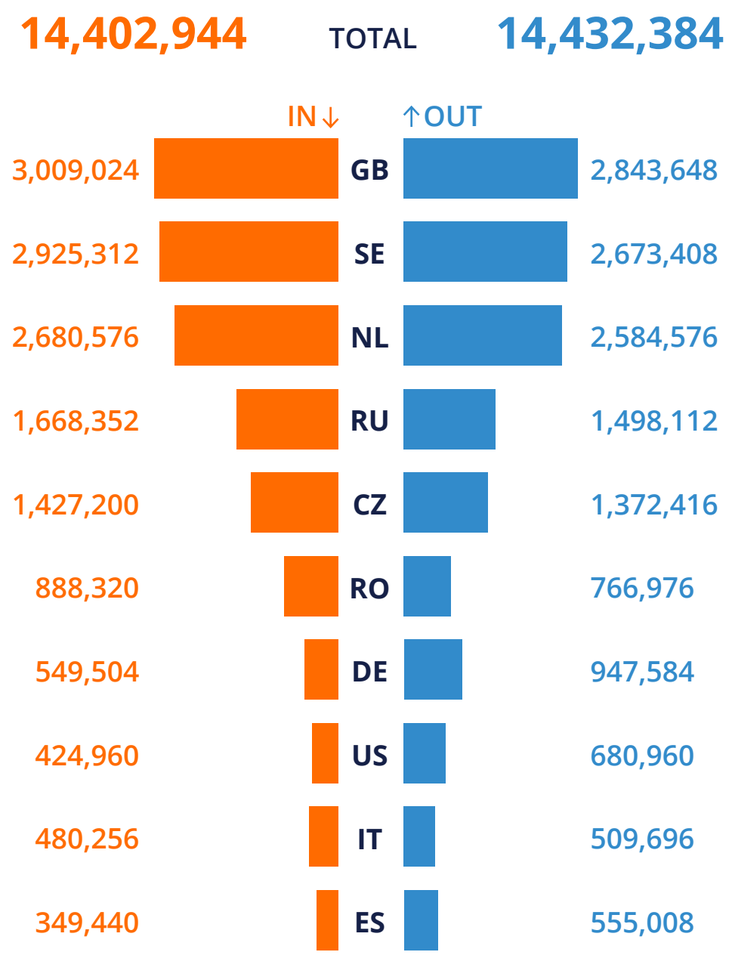




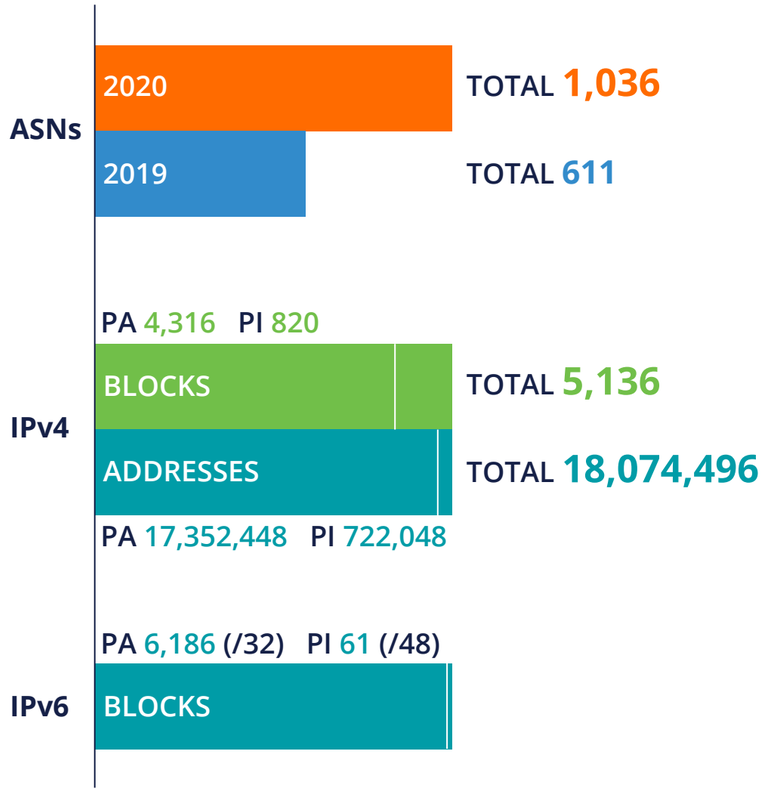
TRANSFERS OVERVIEW

Here is an overview of resource transfers between the RIPE NCC and other RIRs, and within the RIPE NCC service region.
The figures below include policy transfers and other transfers resulting from a change in business structure (e.g. mergers and acquisitions).

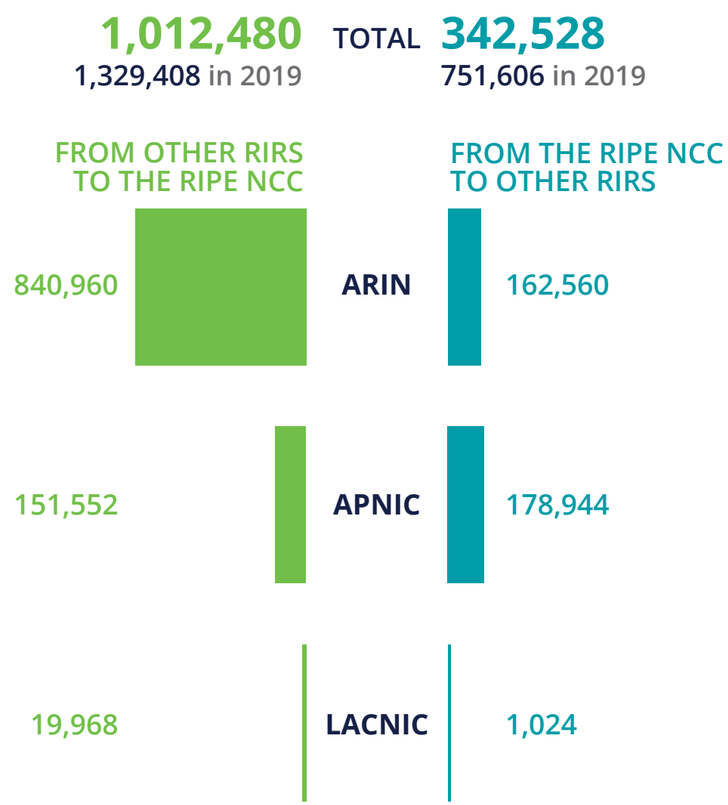
INTRA-RIR TRANSFERS BY COUNTRY - TOP 10 (IPv4 addresses)



TRANSFERS WITHIN THE RIPE NCC'S SERVICE REGION



INTER-RIR TRANSFERS (IPv4 addresses)



RIPE REGISTRY ACCOUNTABILITY

ASSISTED REGISTRY CHECKS (ARCs)

An Assisted Registry Check is how we help members ensure their data is accurate and up to date. We provide personalised support over a call or in person at events to help members correct any inconsistencies. Our goal is to constantly strengthen the quality of data in the registry. During an ARC, among other things, we check an LIR's legal name, address and contacts, IPv4 and IPv6 resources registered, and whether their BGP announcements are consistent with the Routing Registry.

READ MORE

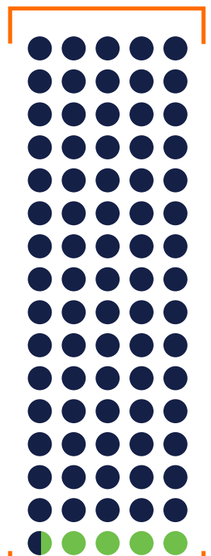
ABUSE-C: VALIDATION

In 2020, we continued to implement the Abuse Contact (abuse-c) management policy and validated over 80,117 email addresses. 5.5% of those required manual intervention.

READ MORE

IN 2020

3,853 ARCs completed



80,117
validated email addresses

75,634
validated using automated process

4,483
email addresses required manual intervention

50,890
abuse-c ROLE objects created and/or updated

MEMBER FEEDBACK ON ARCs:

"The analyst called me on time, was friendly, and very helpful to answer all questions I had."

"ARCs seem very efficient and are a good point to take any outstanding questions directly with the RIPE NCC."

"This was our first check and I found the explanations and service to be accurate and extremely useful."

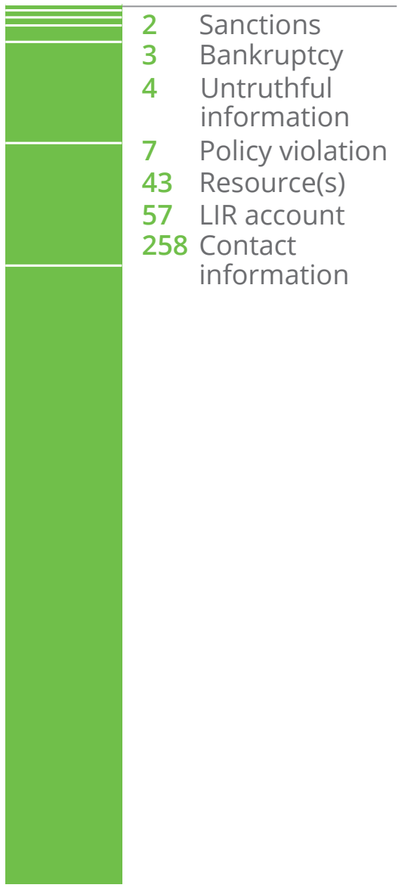
REPORTS AND INVESTIGATIONS

REPORTS RECEIVED VIA THE ABUSE FORM

TOTAL
914

NUMBER OF INVESTIGATIONS (EXCLUDING ABUSE-C)

TOTAL
374



ABUSE-C VALIDATION INVESTIGATIONS

TOTAL
4,914

SECURITY INCIDENTS

Security incidents are detected on the basis of audits performed, alerts from our network intrusion detection system and external reports.

IN 2020

6 Low-impact security incidents

8 Medium-impact security incidents

0 High-impact security incidents

SECURITY REPORTS

We encourage the reporting of vulnerabilities in line with our Responsible Disclosure Policy. Read more

IN 2020

654 Security-related reports received

87 Reports were relevant

HIJACK INVESTIGATIONS

IN 2020

267 Hijack investigations

RIPE DATABASE UPDATES

Here are some of the updates we made to the RIPE Database in 2020

OPENED

Opened Whois Near Real Time Mirroring (NRTM) service to all users

CLEANUP

Cleanup of Locked Person objects: Originally locked by the RIPE NCC to prevent unauthorised modifications, we re-assigned those locked persons to the relevant LIRs

IMPLEMENTED

Implemented cloud migration to AWS for the Release Candidate environment as proof of concept

Implemented NWI-10: Set the country code on LIR organisation objects in the RIPE Database using the organisation's legal address

Implemented NWI-11: Punycode Internationalised Domain Names in email addresses

Implemented 2018-06 NONAUTH Route(6) Cleanup

ADDED

Added NRTM and HTTP query rate limiting

RPKI

In 2020, we observed a significant growth in RPKI adoption by networks around the world, both on the signing and on the validation side. To ensure a safe, stable and resilient Trust Anchor, we have made extensive progress in various areas from security to alerting.

To focus on our work around the Trust Anchor, we announced that we will sunset the RIPE NCC's RPKI Validator on 1 July 2021, as we believe there are enough mature alternatives on the market.

READ MORE

HIGHLIGHTS

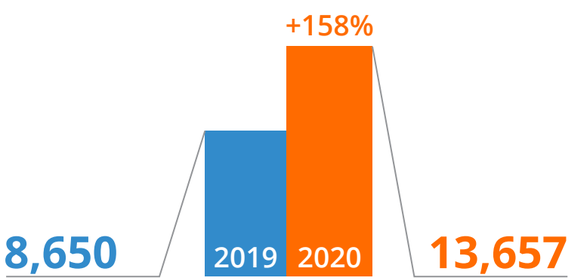
We participated in a tutorial that showed network operators how to set up RPKI, from signing ROAs to various routing vendor implementations.

We created an RPKI audit framework (SOC2 type II) that can be used by all Trust Anchors.

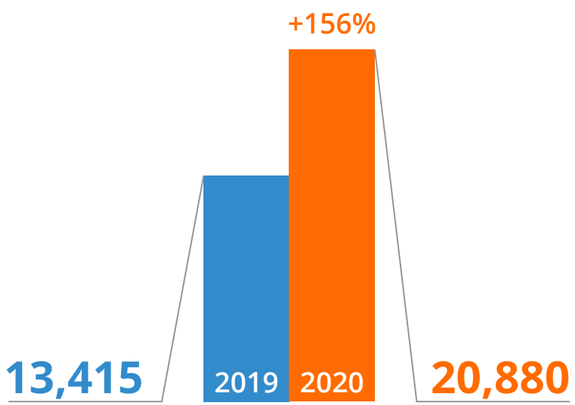
3,327
members set up their Certification Authority.

47%
of all IPv4 space and 30% of all IPv6 space from the RIPE NCC is now covered with a ROA.

RPKI CERTIFICATES



ROAs



INFORMATION SERVICES

CELEBRATING 10 YEARS OF RIPE ATLAS

RIPE Atlas was envisaged a decade ago as a community-driven global Internet measurements system that could potentially be on an 'unprecedented scale', with vantage points in every network. The idea was to focus on 'network level' measurements as much as possible while creating and nurturing an ecosystem of contributors and users. Ten years after the launch, how close are we to fulfilling this vision? Take a look at how RIPE Atlas has evolved!

2007
- Inspirations and early explorations

2008
- Feasibility studies and hardware options explored

2009
- Early stages of architecture and design
- First public presentation at RIPE 58

2010
- First 500 probes delivered
- First ping results appear on 7 November
- The project is officially named 'RIPE Atlas'
- Announced at RIPE 61 in Rome

2011
- First 'User Defined Measurements'
- Version 2 of the probes launched
- 1,000 probes connected

2012
- RIPE Atlas anchors introduced

2013
- Version 3 of probes go live

2014
- 5,000 probes connected

2016
- API version 2 introduced

2017
- 10,000 probes connected
- Virtual Machine (VM) anchors announced

2018
- First VM anchor goes live
- Version 4 probes released
- Software probe development and testing

2019
- Software probes go live
- RIPE Atlas data is made available via Google BigQuery

2020
- New Atlas UI launched
- We celebrate 10 Years of RIPE Atlas at RIPE 81

RIPE ATLAS

RIPE Atlas is a leading Internet active measurement network that collects unique data, providing both live and historical information about the reliability, reachability and connectivity of networks.

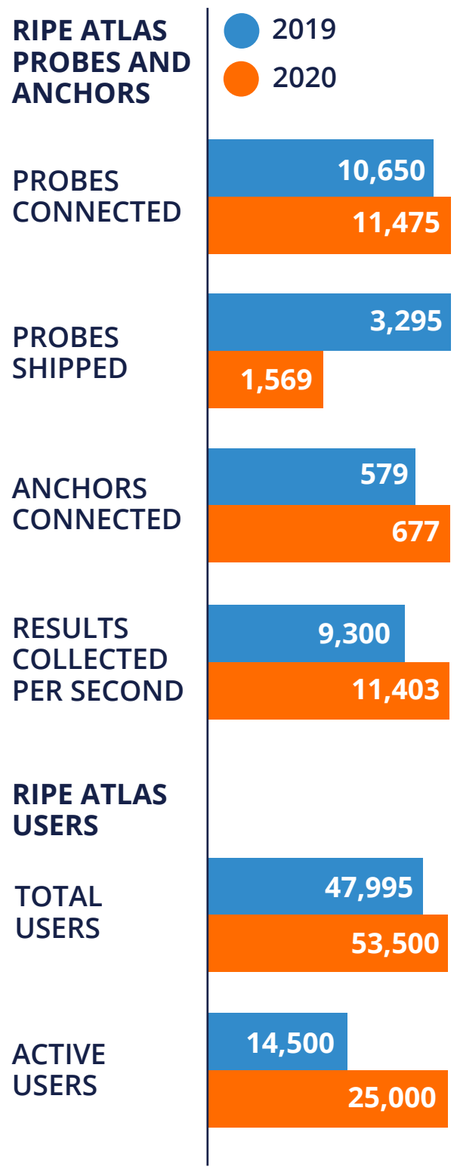
This year marked a new milestone for RIPE Atlas, as we celebrated 10 years of measuring the Internet in November 2020. We marked the occasion with a series of events, including a RIPE NCC Open House session and the RIPE Atlas Software Probe Deployathon.

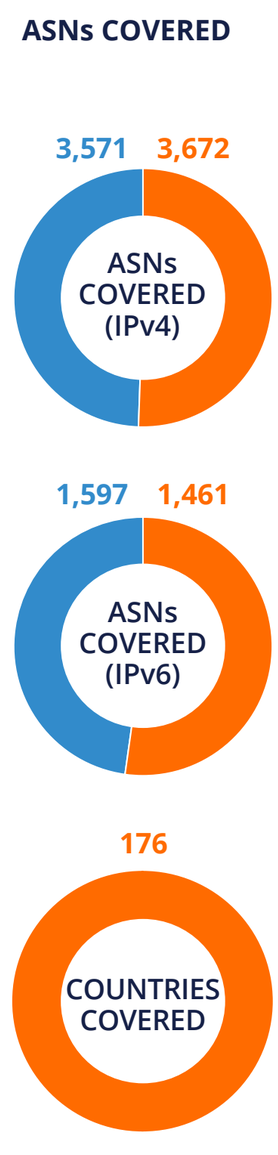
RIPE Atlas probes are now available as software, offering future hosts a new way to help build the RIPE Atlas network. Software probes will improve coverage by bringing RIPE Atlas to new and previously hard-to-reach places, particularly parts of the world where it's difficult to get items delivered, places where plugging devices in isn't an option, or even places where hardware probes just don't function very well (say, due to high temperatures or humidity).

READ MORE

HIGHLIGHTS

- We successfully upgraded 144 old anchors to CentOS 7, saving them from being decommissioned.
- Software probes were officially released.
- The new-look RIPE Atlas user interface was launched. Work is ongoing to stabilise it and will continue into 2021.
- Our public RIPE Atlas measurement results are available via Google BigQuery in addition to our existing API, public measurement result pages, and the daily dumps.





DNS AND K-ROOT

The RIPE NCC runs two independent and equally important DNS services. The first is K-root, one of the 13 Internet root name servers. The K-root service is provided by a set of distributed nodes using IPv4 and IPv6 anycast. The second is a DNS service for RIPE NCC zones, reverse DNS and secondary DNS, which we refer to as AuthDNS.

A cluster of servers in Amsterdam, London, Stockholm, Vienna, Oslo and Rome serve zones for reverse delegations for RIPE NCC member allocations, country code Top-Level Domain (ccTLD) secondary services and RIPE NCC authoritative zones. In an ongoing effort to increase coverage of K-root for better geographical coverage and DDoS resilience, we added seven new hosted nodes in 2020. Similarly, we added two new hosted nodes for the AuthDNS service in Rome and Oslo. We will continue to improve the resilience and capacity of this AuthDNS service with additional hosted nodes as well as core sites.

RIPEstat

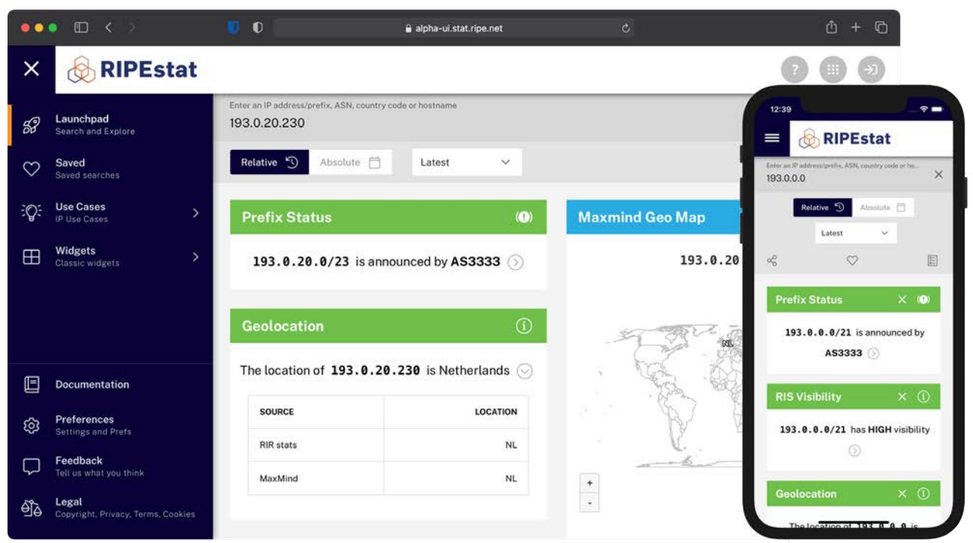
RIPEstat provides users with essential information on IP address space and Autonomous System Numbers (ASNs) along with related statistics on specific hostnames and countries.

HIGHLIGHTS

Collaboration with AFRINIC on the AIRRS (Internet Registry and Routing Statistic) Project. AFRINIC joined forces with the RIPE NCC to build their own "RIPEstat". The project went live in March 2020 and AFRINIC was also able to save time and money by using RIPEstat technology to build their information system.

We released an alternative UI with the following features:

Modern design	Mobile-friendly	Easy to share insights	Customisable	Translation-ready



READ MORE

CLOUD FIRST STRATEGY

In 2020, we laid the groundwork for our Cloud First strategy that will allow us to move part of our infrastructure to the cloud.

This included the training of over 50 engineers and the evaluation and selection of cloud vendors. Moving to the cloud will give us flexibility in capacity planning, improve our service resilience and boost productivity by freeing staff from several time-consuming maintenance tasks.

RIS

The Routing Information Service (RIS) collects routing data from a number of key locations. We run these globally-distributed measurement networks for the purpose of collecting data on Internet infrastructure, usage and development. RIS data is used in both RIPEstat and RIPE Atlas and can interface with other network monitoring tools.

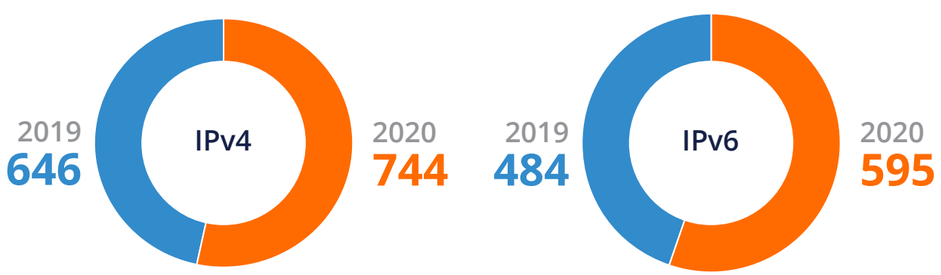
RIS LIVE

RIS Live lets users stream BGP data in real time, allowing them to monitor and detect routing events anywhere in the world as those events occur. With several filters available, users can choose to see whatever BGP messages are of interest to them.

We have made major improvements to the underlying architecture of RIS Live this year to keep up with the ever increasing load from both the growing number of RIS route collectors and RIS Live users. This ensures that the stream can scale while still providing low latencies from BGP peers all the way to WebSocket clients.

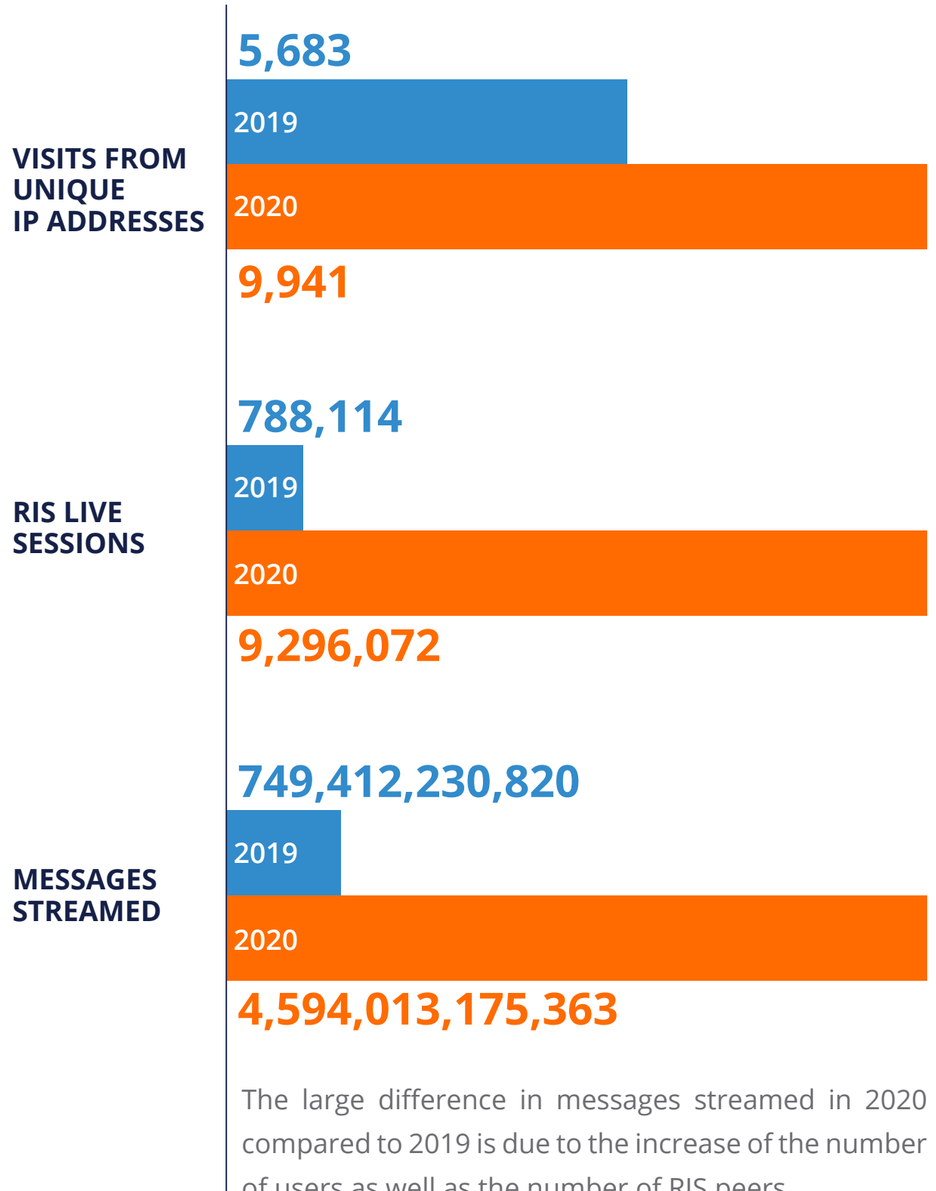
READ MORE

BGP SESSIONS FEEDING RIS



BGP UPDATE DATA CAPTURED

18.4 TB
in MRT format (uncompressed)



The large difference in messages streamed in 2020 compared to 2019 is due to the increase of the number of users as well as the number of RIS peers.

COMMUNITY AND ENGAGEMENT

WORKING TOGETHER WHILE APART

As the pandemic forced us all to work from home, we adapted to the 'new normal' and found innovative ways to engage with our members and community. Our Training and Development team worked tirelessly to move all our training courses online and revamped our free learning platform – RIPE NCC Academy. On top of that, we launched the RIPE NCC Certified Professionals programme, giving industry professionals the opportunity to certify their RIPE Database and IPv6 knowledge online.

We also created a new event format to engage with our members, the RIPE community and other stakeholders - RIPE NCC Open House, in which RIPE NCC staff and industry experts have open conversations on specific topics. Last but not least, we hosted the RIPE 80 and RIPE 81 meetings online and saw record participation numbers, even finding a way to make virtual 'hallway chats' possible with SpatialChat!

READ MORE

TRAINING AND E-LEARNING SERVICES

After a busy start to the year, as the pandemic spread, our trainers put away their suitcases and got to work adapting our in-person training courses on the RIPE Database, Basic and Advanced IPv6, IPv6 Security, Measurements and Tools, and BGP and Routing Security to an online-friendly format.

This led to the creation of longer two hour webinars, and the introduction of new one hour webinars. We also hosted 'RIPE NCC::Educa IPv6-only' on the occasion of the World IPv6 Launch anniversary.

We introduced these webinars in 2020, in addition to our existing webinars:

- IPv6 Prefix Calculation
- Basic IPv6 Protocol Security
- IPv6 Security Myths, Filtering and Tips
- IPv6 Host Configuration

READ MORE

IN 2020, WE HOSTED

1 RIPE NCC Educa:: with **400** participants

7 workshops with **202** participants

18 training courses with **358** participants

73 webinars with **1,890** participants

THE RIPE NCC ACADEMY

The RIPE NCC Academy was re-launched in February 2020 with an updated look and feel, in keeping with updates being made to other RIPE NCC services.

We launched the updated RIPE Database course, which is aligned with the RIPE Database Associate certification. Along with this, we also stopped issuing certificates via the RIPE NCC Academy as all certificates are now earned through the RIPE NCC Certified Professionals programme. Work has been underway on a brand new 'IPv6 Security' course, and on updating the 'Introduction to IPv6' course, both of which will be launched in 2021. We also decommissioned the LIR training course as it required extensive updates.

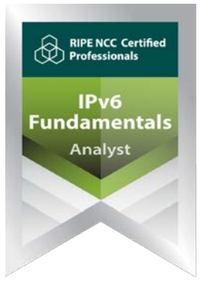
READ MORE

IN 2020

1,505 learners enrolled for the RIPE Database course

1,216 learners enrolled for the Introduction to IPv6 course

RIPE NCC CERTIFIED PROFESSIONALS



The RIPE NCC Certified Professionals programme was officially launched in April 2020 with the release of the RIPE Database Associate exam.

We then launched our second exam, IPv6 Fundamentals - Analyst in August 2020. The exams team has begun work on the third exam, IPv6 Security Expert, expected to launch in the first half of 2021.

Each exam is accompanied by a related RIPE NCC Academy online learning course, so that candidates have access to resources. We expect to launch an updated IPv6 and a brand new IPv6 Security online exam in 2021.

Throughout the exam development process, we involve experts from the community to share feedback so that our certifications are aligned with market requirements. This includes running Job Task Analysis surveys while exams are being developed, and working experts from outside the RIPE NCC to develop high-quality exam questions.

READ MORE

POLICY DEVELOPMENT

Policies implemented by the RIPE NCC emerge from an open, transparent, community-led development process. Here is an overview of the policies discussed in 2020. The data shown reflects the status of that policy and participation as of 31 December 2020.

In 2020, one proposal reached consensus and three new proposals were submitted but were subsequently withdrawn following discussions.

READ MORE

IN 2020

75+ participants in the discussions

30 countries

CONSENSUS

Policy proposals that reached consensus: 1

2019-06 Multiple Editorial Changes in IPv6 Policy

16 **13** ***March 2020***

WITHDRAWN

Policy proposals withdrawn: 3

2019-07 Default assignment size for IXPs

13 **9** ***January 2020***

2019-08 SLURM file for Unallocated and Unassigned RIPE NCC Address Space

36 **18** ***July 2020***

2019-04 Validation of "abuse-mailbox"

55 **23** ***September 2020***

PUBLIC AUTHORITY ENGAGEMENT

Our Roundtable Meetings offer government officials and regulators the opportunity to discuss and exchange thoughts on governance issues relevant to the RIPE community, and to get a deeper understanding of complex technical topics.

Over the past year we have continued to contribute to regional and national Internet governance by holding three Roundtable meetings: one aimed at stakeholders in Europe, another one aimed at stakeholders in Eastern Europe, Caucasus and Central Asia and a third one aimed at stakeholders in the Middle East.

Representatives attending these events discussed a variety of issues including the IPv4 transfer market, IPv6 developments, routing security, regulations to support technology, and highlighted the importance of digital cooperation.

In 2020, we sponsored several Internet Governance events, such as the Youth IGF, EuroDIG and SEEDIG.

PUBLIC POLICY CONSULTATIONS

As part of the multistakeholder community, the RIPE NCC contributes to various consultations led by different governmental and inter-governmental organisations that are involved in Internet governance and public policymaking.

In 2020, we contributed to consultations led by individual governments, the European Commission, the International Telecommunication Union, the United Nations, BEREC (Body of European Regulators for Electronic Communications), and the Internet Governance Forum. For example, we responded to the open consultation on the EU's Digital Services Act, which detailed how this legislative proposal would affect the RIPE NCC in its own operations, along with a high-level position paper that gave an overview of what we saw as the major issues that needed to be addressed and the possible implications for the technical layers of the Internet.

READ MORE

COMMUNITY DEVELOPMENT

RACI 2020

The RIPE Academic Cooperation Initiative helps members of the academic community connect with and present to the RIPE community at RIPE Meetings and RIPE NCC Regional Meetings.

We launched a call for applications in early 2020 but were forced to pause RACI due to the pandemic. This is because RACI provides funding to attend meetings in person, which was no longer required due to the virtual format.

We received 78 applications from 38 countries. 15 candidates were accepted in total. Eight of them presented at various virtual meetings (RIPE 80, RIPE 81 and ENOG 17). The selected RACI candidates will instead be offered the opportunity to attend the next in-person meetings.

READ MORE

SEE FELLOWSHIP 2020

In early 2020 we launched the SEE Fellowship. The purpose of the fellowship is to support successful candidates in their professional or academic career development, by funding their participation in the SEE Regional Meeting. We received 15 applications from 11 countries and accepted five of them. However, the SEE meeting has been postponed, and candidates will be funded to attend the next SEE meeting as scheduled.

READ MORE

RIPE FELLOWSHIP 2020

Through the RIPE Fellowship, we aim to increase diversity in the RIPE community by supporting those from underrepresented regions, minority backgrounds or those in need of funding to attend a RIPE Meeting. Fellowships are open to those living or working in the RIPE NCC service region, and studying or working in the fields of Internet technology and related topics of interest to the RIPE community.

We launched a call for applications in early 2020. When the pandemic struck, the RIPE Fellowship was put on pause as all of our meetings currently take place online and participation is free of charge, eliminating the benefit of applying for fellowship funding.

We received 91 applications, out of which we accepted 12 candidates. The candidates will be kept in consideration for the next in-person meeting.

READ MORE

RIPE MEETING MENTORING PROGRAMME 2020

The RIPE Meeting Mentoring programme brings together experienced community volunteers to mentor newcomers at RIPE Meetings. The mentoring programme was suspended for RIPE 80 due to the short transition period available to adapt it to a virtual format. However, it was reinstated at RIPE 81.

RIPE 81 had 26 pairs of mentors and mentees.

READ MORE

HACKATHONS

Our hackathons bring together network operators, researchers, coders, developers and general enthusiasts to take on a challenge in the spirit of cooperation.

All our hackathons are committed to producing Free and Free-Libre/Open Source Software (FLOSS) that can contribute to the community. While we usually host hackathons in an in-person format, bringing together a diverse mix of people, skills and expertise, this year, both hackathons were completely virtual.

READ MORE

THE INTERNET HEALTH HACKATHON

In the true hacker spirit, we held our first completely virtual hackathon to measure and visualise the health of the Internet in the early days of the pandemic. The virtual hackathon went on over a period of seven weeks, from 20 March to 8 May 2020. In total, we had ten active participants out of thirty who had initially expressed interest. There were roughly twenty projects proposed, of which four produced tangible results.

PARTICIPANTS
10

WEEKS
7

TANGIBLE RESULTS
4

READ MORE

RIPE ATLAS SOFTWARE PROBE DEPLOYATHON

As part of the celebrations marking 10 years of RIPE Atlas, we organised a global “deployathon” in November to encourage the installation of RIPE Atlas software probes installed around the world. One of the most important achievements for us was engaging with and getting useful feedback on RIPE Atlas. This virtual event brought together RIPE Atlas enthusiasts, from ambassadors to novices, and also provided feature requests, and bugs were spotted and fixed. We had over 100 participants from 30 countries, who together deployed 34 software probes in one day!

PARTICIPANTS
100

COUNTRIES
30

SOFTWARE PROBES DEPLOYED
34

READ MORE

OPEN HOUSE EVENTS

RIPE NCC Open House events are 60- to 90-minute-long online sessions bringing together experts from the RIPE NCC and our wider network for a focused discussion on topics of interest to our stakeholders.

An Open House event consists of a mixture of short presentations, panel discussions, Q&As with experts and open mic sessions with participants. As the name suggests, these events are free and open to all. By creating a series of focused events, we offer our stakeholders insights into issues at hand such as the session on the Digital Services Act in Europe, or let the community offer their feedback, like in the session on our RIS service.

All these sessions are recorded and available online.

READ MORE

WE HOSTED ELEVEN OPEN HOUSE SESSIONS IN 2020

- Academic Cooperation and E-Learning
- Let's Go Virtual! Co-presented with LINX
- What does the new Digital Services Act mean for you?
- Internet in North Macedonia
- Internet in Kazakhstan
- Internet in Greece
- Get Certified! Co-hosted with PSI
- Central Asia Internet Country Report
- RIS in Focus
- 10 Years of RIPE Atlas
- Internet in Georgia

RIPE 80

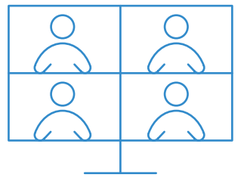
RIPE 80 took place in a virtual format from 12-14 May 2020.

Originally scheduled to be held in Berlin from 11-15 May, amidst rising concerns over COVID-19, the RIPE Chair announced on 19 March 2020 that this would be our first completely virtual RIPE Meeting.

To suit the virtual format, we decided to make RIPE 80 a three-day event, with a shorter programme and sessions of 45 minutes with 15 minute breaks to reduce the "Zoom fatigue". We used a combination of Zoom Webinar and live-streaming on the RIPE 80 website for those that couldn't to connect to Zoom to run the event.

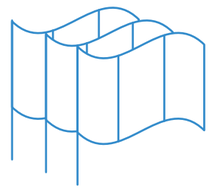
RIPE 80 saw record registration numbers with 2,002 participants. Around 57% were RIPE NCC members, and 53% were new to RIPE Meetings.

READ MORE



VIRTUAL EVENT
12-14 MAY 2020

ATTENDEES
2,002



COUNTRIES
97

HIGHLIGHTS

- First ever completely virtual RIPE Meeting
- Hans Petter Holen introduced as the RIPE NCC Managing Director
- RIPE Chair NomCom discussion

RIPE 81

RIPE 81 took place in a virtual format from 27-30 October 2020.

This meeting was originally slated to be held in Milan from 28 September to 2 October 2020. At the beginning of June, with the pandemic still raging, the meeting format was officially declared to be virtual, and the dates were shifted slightly to the end of October.

We chose to use Meetecho as the meeting platform and attendees could also follow the meeting via the livestream on the meeting website. We also used Spatialchat, for informal "hallway" chats. Once again, the virtual format drew higher numbers of registrations from different countries and attracted a higher proportion of newcomers than we usually see at physical meetings. Our post-meeting survey also revealed that while attendees were satisfied with the choice of meeting platforms and shared positive feedback about the virtual meeting in general, there is still a call for a return to physical meetings when possible.

Our second fully virtual RIPE Meeting welcomed 1,224 people from 85 countries. 89% of attendees were from the RIPE NCC service region. 50% were RIPE NCC members, and 42% were new to RIPE Meetings.

READ MORE

VIRTUAL EVENT
27-30 OCTOBER 2020

ATTENDEES
1,224

COUNTRIES
85

HIGHLIGHTS

- First RIPE Meeting for the new RIPE Chair team: Mirjam Kühne and Niall O'Reilly
- Interesting reports from the RIPE Database Requirements Task Force and Code of Conduct Task Force and an update on the RIPE WG Chairs Collective Document during the RIPE Community Plenary

THE COMMUNITY PROJECTS FUND

The RIPE NCC provides EUR 250,000 per year to support projects of value to the operation, resilience and sustainability of the Internet, with a focus on tools and services benefitting the technical community in our service region, as part of our "Good of the Internet" initiatives. Projects are chosen by the selection committee consisting of volunteers from the RIPE community and a member of the RIPE NCC Executive Board.

We opened a call for applications in June 2020, and eight projects were selected as the 2020 recipients of the RIPE NCC Community Projects Fund.

The application period was open for just over eight weeks and 35 applications from 21 different countries were received.

READ MORE

CONGRATULATIONS TO THE SELECTED PROJECTS

BGP Hijacking Observatory
University of California San Diego's Center for Applied Internet Data Analysis (CAIDA)

Closed Resolver Project
Grenoble Alpes University, Computer Science Laboratory (LIG Lab)

Cryptofuzz
Guido Vranken

FRRouting Fuzzing
Sartura

Improve Tails for censorship circumvention
Riseup Labs

NRTM v4
Sasha Romijn, DashCare B.V.

Some Congestion Experienced (SCE)
netDEF

Virtual School of Internet Governance
Foundation for Building Sustainable Communities

READ ABOUT THE FUNDING RECIPIENTS FOR 2020

RIPE LABS

RIPE Labs is an open platform for network operators, researchers, developers and others to share case studies, best practices, deployment experiences, prototypes, research and more. We also use RIPE Labs to share ideas and ask for feedback from the community, as well as trial prototypes for our tools.

The most written-about topics in 2020 included security, Internet measurements, routing, Internet governance, DNS and the impact of COVID 19.

At RIPE 81, Alun Davies was introduced as the new RIPE Labs Editor, taking over from Mirjam Kühne and plans were announced for a revamp of the platform. The new RIPE Labs interface is scheduled to go live in the first quarter of 2021.

THREE MOST-READ RIPE LABS ARTICLES IN 2020:

1

What's the Deal with IPv6 Link-Local Addresses?

12,805 VIEWS

READ MORE

2

Don't Terminate People's Internet Connections

10,489 VIEWS

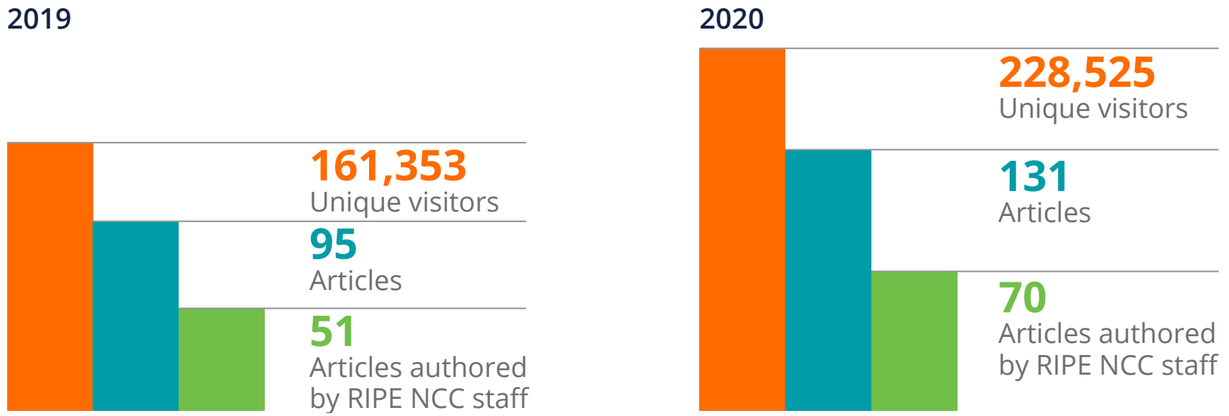
READ MORE

3

Do We Need a New IP?

6,014 VIEWS

READ MORE



INTRODUCING THE NEW RIPE CHAIR TEAM

Mirjam Kühne and Niall O'Reilly assumed their roles as RIPE Chair and RIPE Vice Chair as of 1 September 2020. They will serve for a term of five years with a two-term limit.

This is the first time that the RIPE Chair has been selected by the community according to an established procedure. For the first 25 years, RIPE was chaired by Rob Blokzijl, who as one of the founders of RIPE was "volunteered" for the position by his colleagues in 1989. In 2014, Rob passed the role to Hans Petter Holen, with the recommendation that he work with the community to develop a replacement procedure for future RIPE Chairs.

The RIPE NCC looks forward to working with both Mirjam and Niall over the coming years.

The new RIPE Chair team has been sharing updates on their work regularly on RIPE Labs.

READ MORE

MIRJAM KÜHNE, RIPE CHAIR

Mirjam Kühne has been a member of the RIPE community since its inception and has served as Senior Community Builder at the RIPE NCC for the past ten years. Previous to this role, Mirjam worked at the Internet Society (ISOC) as Senior Program Manager. She has a deep knowledge of the RIPE community and collaborates regularly with colleagues from various sectors including technical, security, academic and government. Mirjam has also been a strong advocate of making the RIPE community an open and safe place for everyone.

NIALL O'REILLY, RIPE VICE CHAIR

Niall O'Reilly has been involved in the RIPE community since 1990 and has chaired several Working Groups (TLD, ENUM). He retired from University College Dublin IT Services in 2014, where he was responsible for network infrastructure, including planning the introduction of IPv6.

INSIDE THE RIPE NCC

AT THE HEART OF THE RIPE NCC

In 2020, our team was composed of 159 FTEs located in Amsterdam and Dubai as well as consultants working in other parts of our service region. Due to the COVID-19 pandemic, we have had to temporarily close our vibrant office in Amsterdam and disperse to home office set-ups. This hasn't stopped us from continuing to provide high quality services to our 20,000 members who benefit from the expertise of our highly diverse staff – 38 nationalities speaking more than 30 languages.

While most of us are longing for the office to reopen, we've also kept in touch virtually and tried to make the best out of the situation by innovating with virtual social events, from online karaoke to virtual escape rooms.

READ MORE

FTES **159**

FEMALE
38%

MALE
62%

NATIONALITIES
38

LANGUAGE SPOKEN
30+

COMPLIANCE AND TRANSPARENCY

We aim to implement corporate governance best practice where possible. We operate under transparent organisational, management and Executive Board structures.

ARBITRATION CASES

In 2020, there was one arbitration case initiated by a member against the RIPE NCC about our decision to revert a transfer of Internet number resources to their previous holder. All arbitration rulings are available on our website.

READ MORE

CORPORATE GOVERNANCE

In 2020, we amended the following corporate governance documents:

- RIPE NCC Articles of Association
- RIPE NCC Privacy Statement
- Due Diligence for the Quality of the RIPE NCC Registration Data

and adopted two new documents:

- Virtual Meeting Registration Terms and Conditions
- Certified Professionals Terms and Conditions

All of these documents and their previous versions are available on our website.

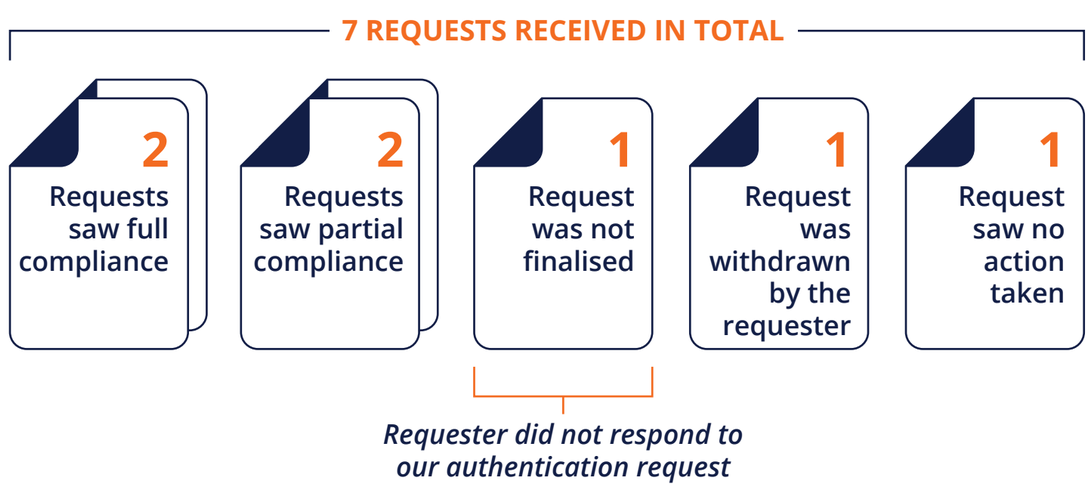
READ MORE

TRANSPARENCY REPORT

The RIPE NCC receives information requests from Law Enforcement Agencies (LEAs) and tries to facilitate the provision of any required publicly available information. We do not provide confidential or private information to LEAs without a court order or other legally enforceable order or request under Dutch law. Read more

GDPR COMPLIANCE

In 2020, we received seven requests from individuals to delete their personal data under the EU General Data Protection Regulation (GDPR).



In three cases we took no action, or only took partial action, as there were legitimate reasons to retain certain personal data. This consisted of contact information of former and existing members. It is crucial that we retain this information in order to preserve the integrity of the RIPE Registry and demonstrate the chain of custody over Internet number resource registration.

SANCTIONS

In 2020, it was discovered that two RIPE NCC members in Iran and one in Syria were believed to be on the EU sanctions list. To ensure our compliance with EU sanctions, we froze the provision of services to these members according to our published audit procedure. We also carried out an audit of our membership and implemented additional sanctions compliance processes and checks.

The COVID-19 pandemic has highlighted the critical role of the Internet in our societies. Consistent with our belief that Internet number resources should not be affected by political disputes or discussions, we submitted a request for an exemption from EU sanctions regulation to the Dutch authorities.

We received a response from Dutch Ministry of Foreign Affairs (MFA) in December 2020. Here, the Ministry confirmed that the RIPE NCC had taken adequate measures to ensure compliance with EU sanctions regulation. It stated that deregistration of the resources was not necessary and the resources could be used but the affected members could not make changes to their registration information (transfer their resources). The Ministry also confirmed its understanding that the registration of IP resources were subject to EU sanctions. It further stated that it was reluctant to grant any exemption for our services from sanctions.

While the Ministry's response mitigates risks to the RIPE NCC in terms of failing to comply with EU sanctions, we believe it is crucial that all RIPE NCC members can depend on their ability to access Internet number resources. We will therefore continue our work to find some form of lasting and comprehensive exemption from all sanctions.

READ MORE

OVERVIEW OF COSTS PER ACTIVITY IN 2020 (in kEUR)

These figures are not part of the Financial Report and as such have not been audited by an external third party. These figures serve only as indications of the costs relating to these activities.

	Budget Operational Expenses 2020	Actual Operational Expenses 2020	Variance
The Registry	**7,212**	**6,711**	**526**
Registration of IP Addresses and ASNs	426	352	74
Processing Registry Updates	1,539	1,637	(98)
Membership Administration	756	850	(94)
Registry Accuracy and Investigations	1,556	1,332	224
LIR Portal	1,501	1,387	114
RPKI	896	690	206
RIPE Database	538	463	75
Information Services	**7,637**	**6,486**	**1,151**
DNS and K-Root	830	864	(34)
RIPE Atlas	796	856	(60)
RIPEstat	702	680	22
RIS	770	789	(19)
IT Security	942	573	369
Research	829	638	191
IT Support	2,768	2,086	682
Community and Engagement	**9,294**	**6,098**	**3,196**
Membership Engagement	1,706	1,600	106
Community Development	2,850	976	1,874
Public Authority Engagement	661	596	65
Internet Governance	890	628	262
Training and E-learning Services	1,726	1,584	142
Certified Professionals	1,122	533	589
Good Of The Internet	339	181	158
Maintaining a Strong Organisation	**8,751**	**8,365**	**386**
Facilities	2,248	1,775	473
HR	1,131	1,186	(55)
Legal	660	781	(121)
Finance	1,390	1,497	(107)
Information Security and Compliance	-	-	-
Organisational Sustainability	3,322	3,126	196
RIPE NCC	**32,894**	**27,660**	**5,234**
Bad Debts	250	277	(27)
Depreciation	1,300	1,156	144
RIPE NCC TOTAL	**34,444**	**29,093**	**5,351**

RIPE NCC
RIPE NETWORK COORDINATION CENTRE

WWW.RIPE.NET