



Annual Report

2022

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WELCOME TO THE 2022 RIPE NCC ANNUAL REPORT

The past year brought many difficult moments for our members and for staff at the RIPE NCC. The war in Ukraine weighed heavily on our minds and raised questions about how we could support our membership and community. We also had to deal with added work brought on by sanctions and other developments in our service region. In the face of these challenges, we focused on strong service delivery, strengthening our community engagement, and enhancing our internal processes to best meet these needs.

One of our first considerations early this year was how the RIPE NCC could support its Ukrainian members as they worked to maintain network operations in the midst of an active warzone. We offered a payment extension on invoices for all Ukrainian members through the year 2022. To support routing security in the country, we hosted a training session and Open House for Ukrainian network engineers to share best practices for BGP security. Based on community input in late 2022, we also introduced a new voluntary lock feature in the Registry. This allows members in Ukraine or elsewhere to prevent transfers for a six-month period if they are concerned that their resources might be at risk.

The war also resulted in the application of a large number of EU sanctions against Russian entities, requiring us to investigate whether these applied to any of our members. The number and complexity of these investigations created a heavy workload for our Registry and Legal staff. Banks' zero-tolerance policies regarding sanctions also prevented us from invoicing Iranian and

Syrian members. In 2022, compliance was a key focus for us across all areas of the organisation. To lead these efforts, we hired our first Chief Information Security Officer, who now heads our Information Security and Compliance Department. In light of the situations in our service region, in 2022 the RIPE NCC Executive Board reaffirmed our neutrality and our commitment to providing uninterrupted service to all of our members.

Throughout all of this, engagement with our membership and community has remained at the centre of the RIPE NCC's work as an organisation. We were excited to return to physical meetings and training courses with our members, while still fully involving online attendees. We expanded our outreach with regional meetings, including our new Central Asia Peering and Interconnection Forum (CAPIF). We resumed our RIPE NCC Days and Internet Measurement Days in several countries. While members of the Eurasian Network Operators Group (ENOG) decided to indefinitely postpone meetings in light of the war in Ukraine, we maintained our connections with this community through smaller, more focused engagements. We also continued country-specific Open Houses and regional Government Roundtable meetings for targeted engagement with our members and other stakeholders in the Internet ecosystem.

We also opened up new ways to interact with our members. We launched a new online forum as a discussion platform for people to connect with each other and with the RIPE NCC. On our website, we added a live chat feature so users can quickly

reach out for immediate support. We have a new translations platform that explains key topics relating to our services in six different languages. We also improved our information services for a better user experience: BGPlay's UI got a facelift, the search UI of the RIPE Database has been improved, and many RIPE Atlas users are now running the newly distributed version 5 hardware probes, bringing more quality data to users.

Our Learning and Development team continued to develop its programme with the launch of several new courses in the RIPE NCC Academy—IPv6 Fundamentals, Internet Governance, and BGP Security—and the new BGP Security Associate Certified Professionals exam. We ended the year having issued nearly 2,000 certifications since the programme began, an important milestone for us and for our members. Expanding capabilities and knowledge helps our membership and the whole RIPE community stay resilient in a fast-changing technical landscape, and we are proud to play a role in building that resilience.

In spite of a challenging year, we have many accomplishments to report in this document. Across the organisation, our teams have improved services, processes and tools, while making big plans for future improvements. With talented staff and our Five-Year Strategy guiding us, we will continue to develop a stronger RIPE NCC and support a more engaged RIPE community. For now, let's take a closer look at everything the RIPE NCC was up to in 2022.



HANS PETTER HOLEN
MANAGING DIRECTOR



ONDŘEJ FILIP
CHAIR OF THE
EXECUTIVE BOARD

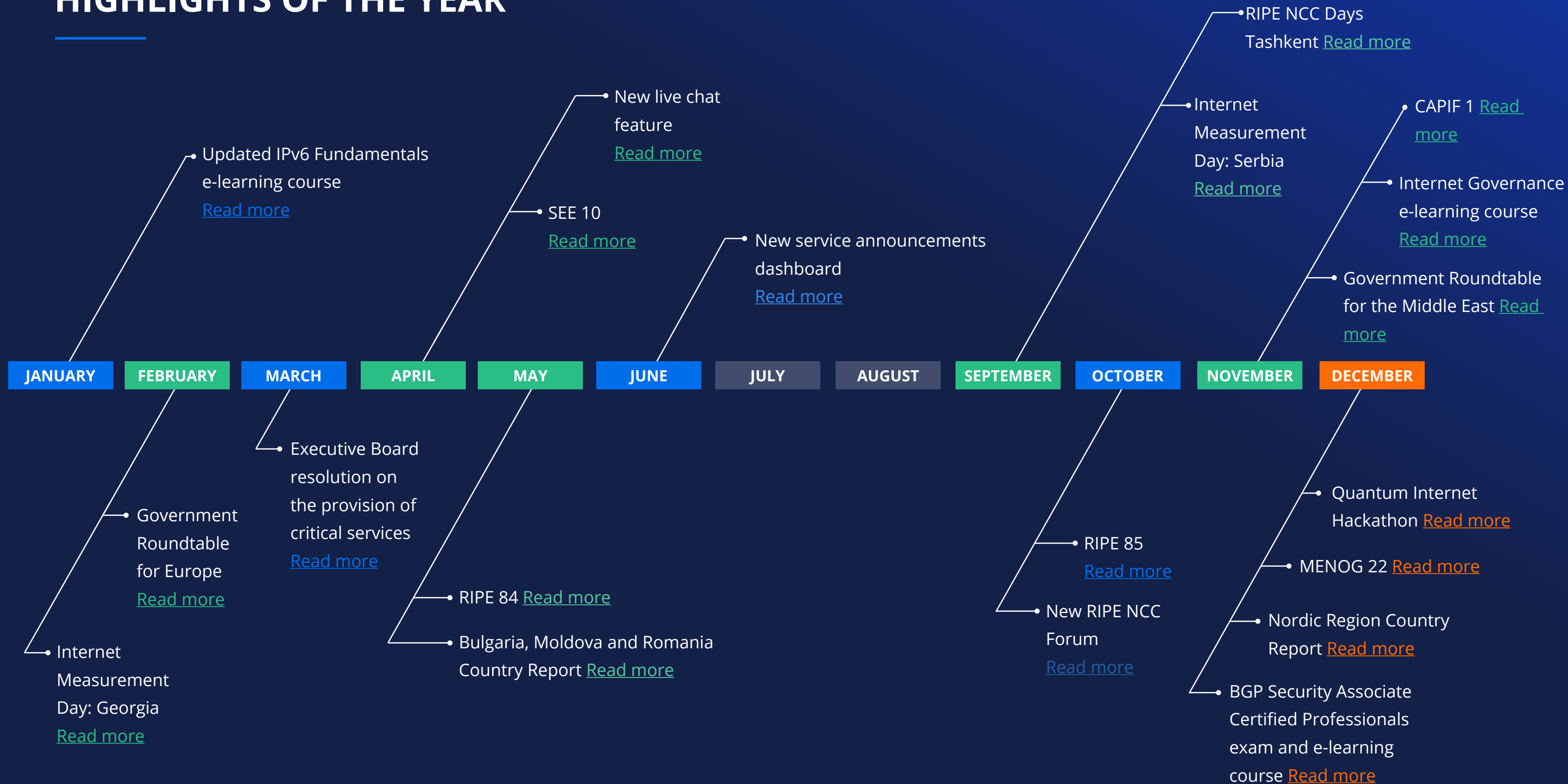
RIPE NCC EXECUTIVE BOARD



From left to right: Job Snijders, Remco van Mook, Maria Häll, Christian Kaufmann, Ondřej Filip (Chair), Raymond Jetten (Treasurer) and Piotr Strzyżewski (Secretary).

[READ MORE](#)

HIGHLIGHTS OF THE YEAR





MEMBERSHIP OVERVIEW

All numbers are as of 31 December 2022. Please note that one member can hold more than one LIR.

23,383

Total number of active LIRs

1,732

New LIRs

122

Member countries

20,231

Total number of active members

15,226

Members with an IPv6 allocation

TOP 10

MEMBERS BY COUNTRY

| | |
|----|-------|
| DE | 2,235 |
| GB | 2,061 |
| RU | 1,538 |
| FR | 1,267 |
| NL | 1,172 |
| IT | 1,141 |
| SP | 1,017 |
| CH | 717 |
| PL | 681 |
| TR | 532 |

TOP 10

NEW MEMBERS BY COUNTRY

| | |
|----|-----|
| DE | 111 |
| GB | 107 |
| NL | 70 |
| RU | 67 |
| FR | 65 |
| TR | 50 |
| ES | 47 |
| CH | 37 |
| IR | 34 |
| US | 25 |

TOP 10

LIRS BY COUNTRY

| | |
|----|-------|
| DE | 2,427 |
| GB | 2,377 |
| RU | 2,045 |
| NL | 1,643 |
| FR | 1,396 |
| IT | 1,208 |
| ES | 1,147 |
| CH | 758 |
| PL | 733 |
| TR | 593 |

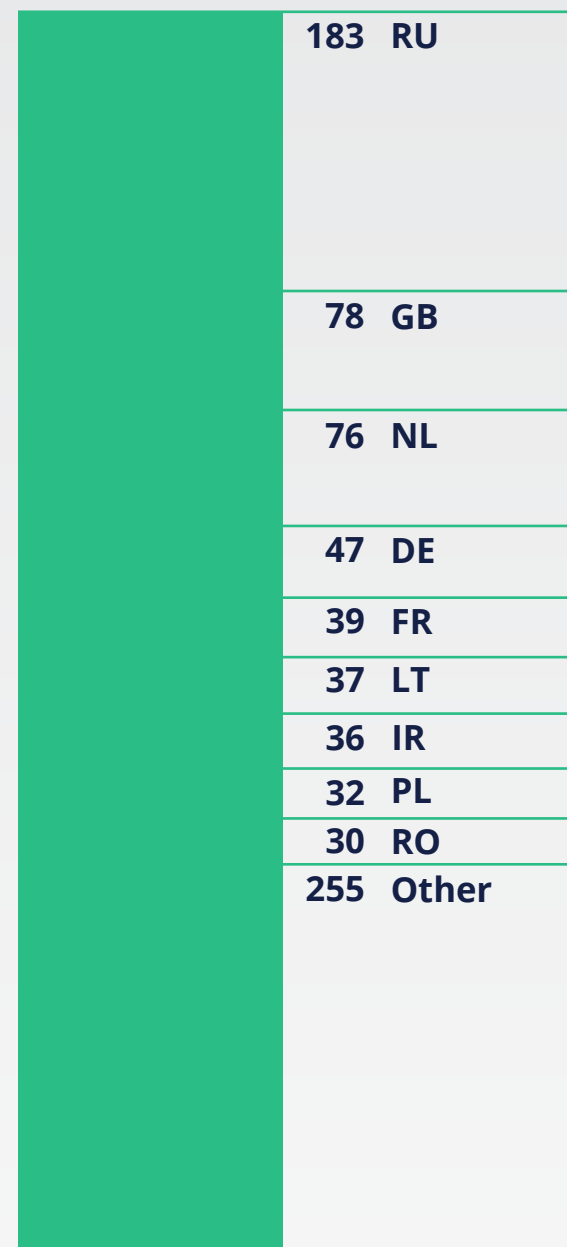


The Registry

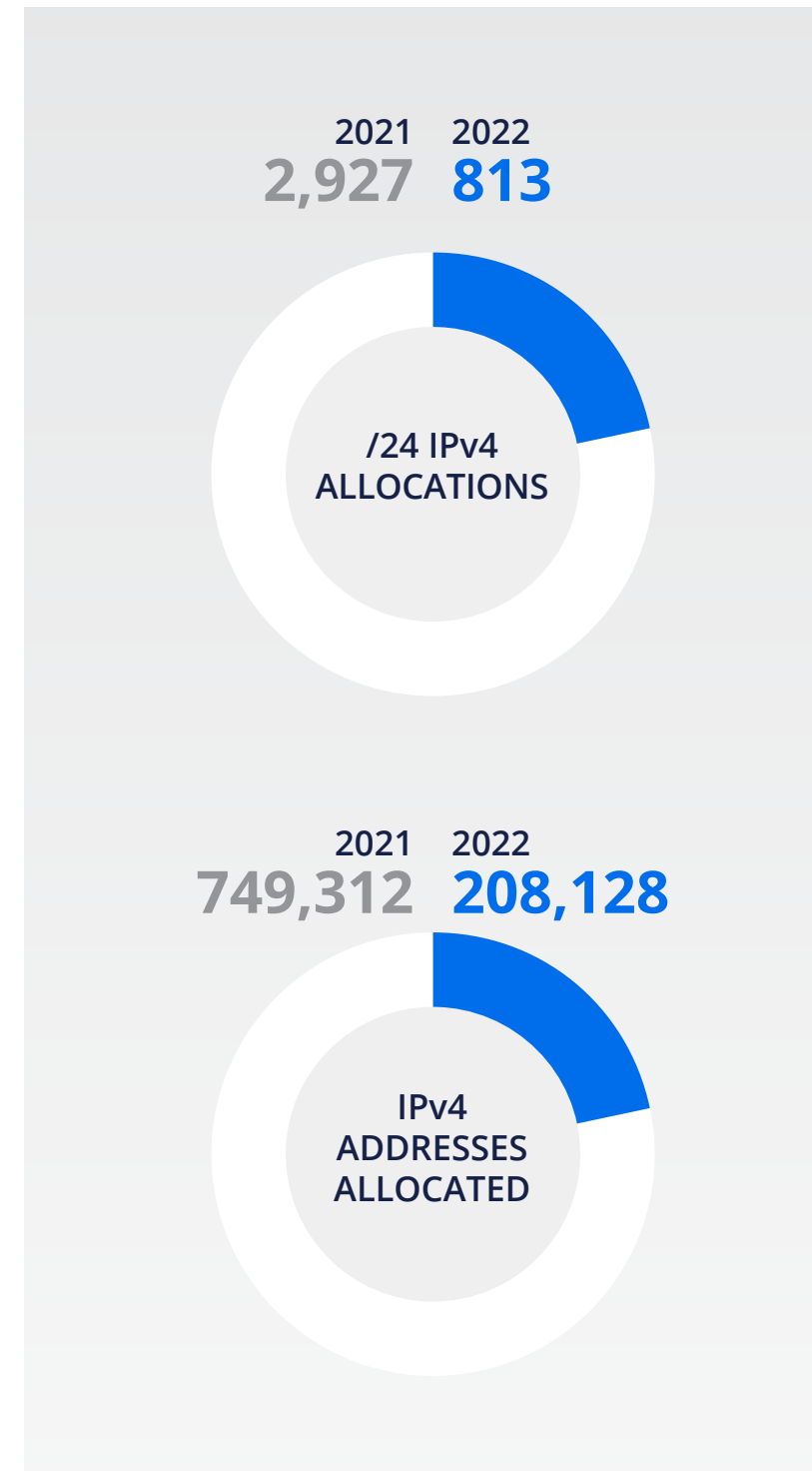
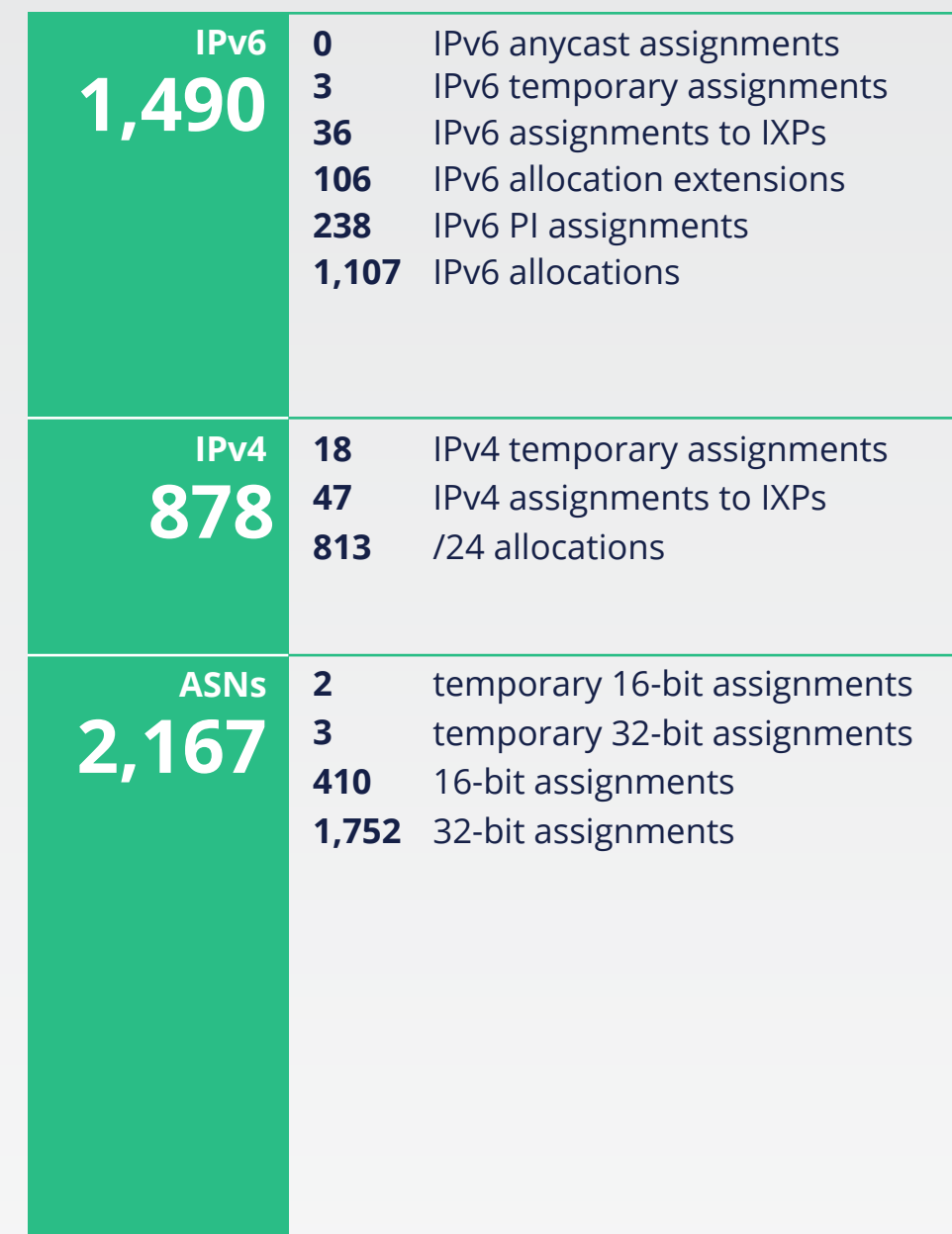
INTERNET NUMBER RESOURCES OVERVIEW

All numbers are as of 31 December 2022.

IPv4 /24 ALLOCATIONS BY COUNTRY

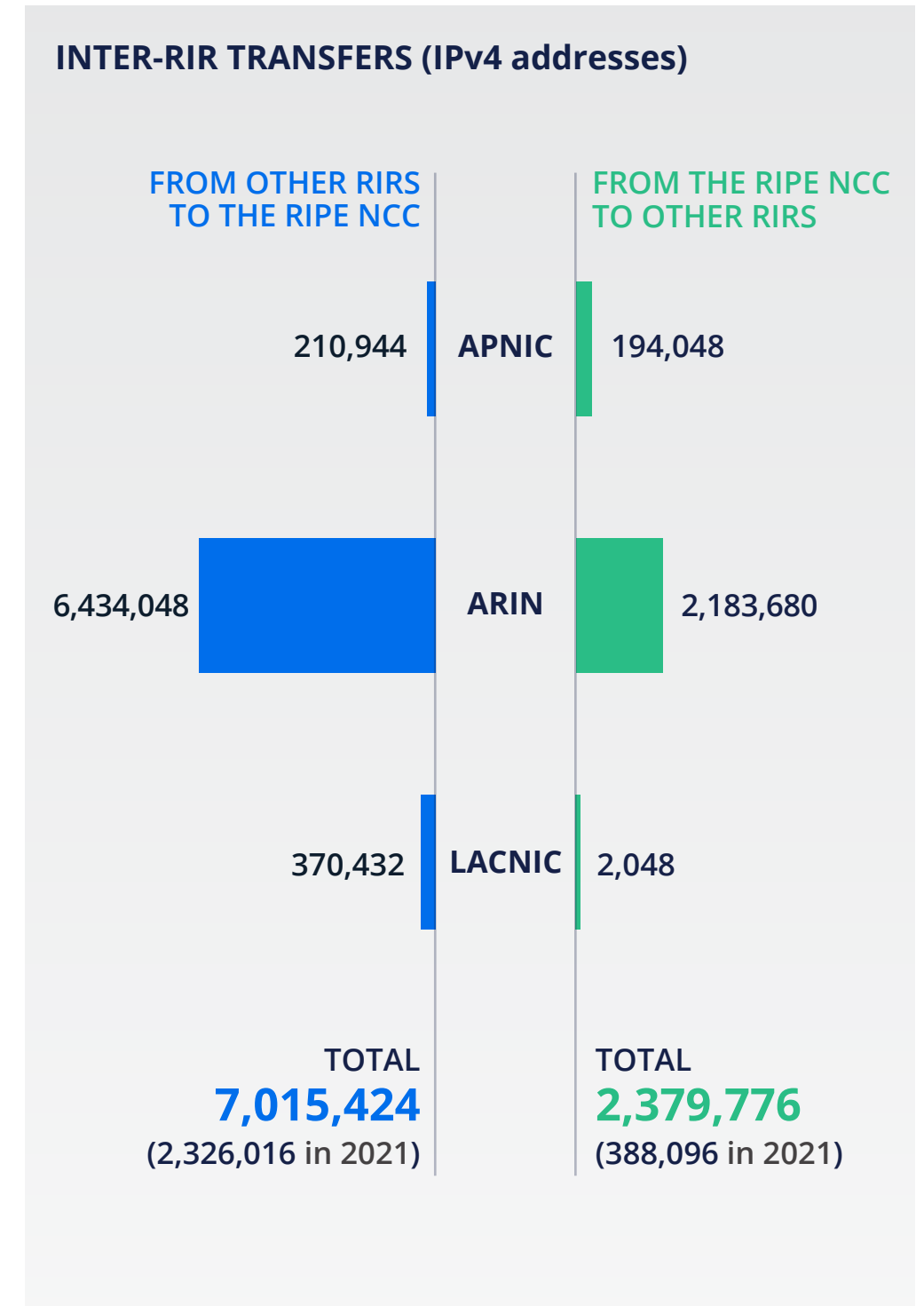
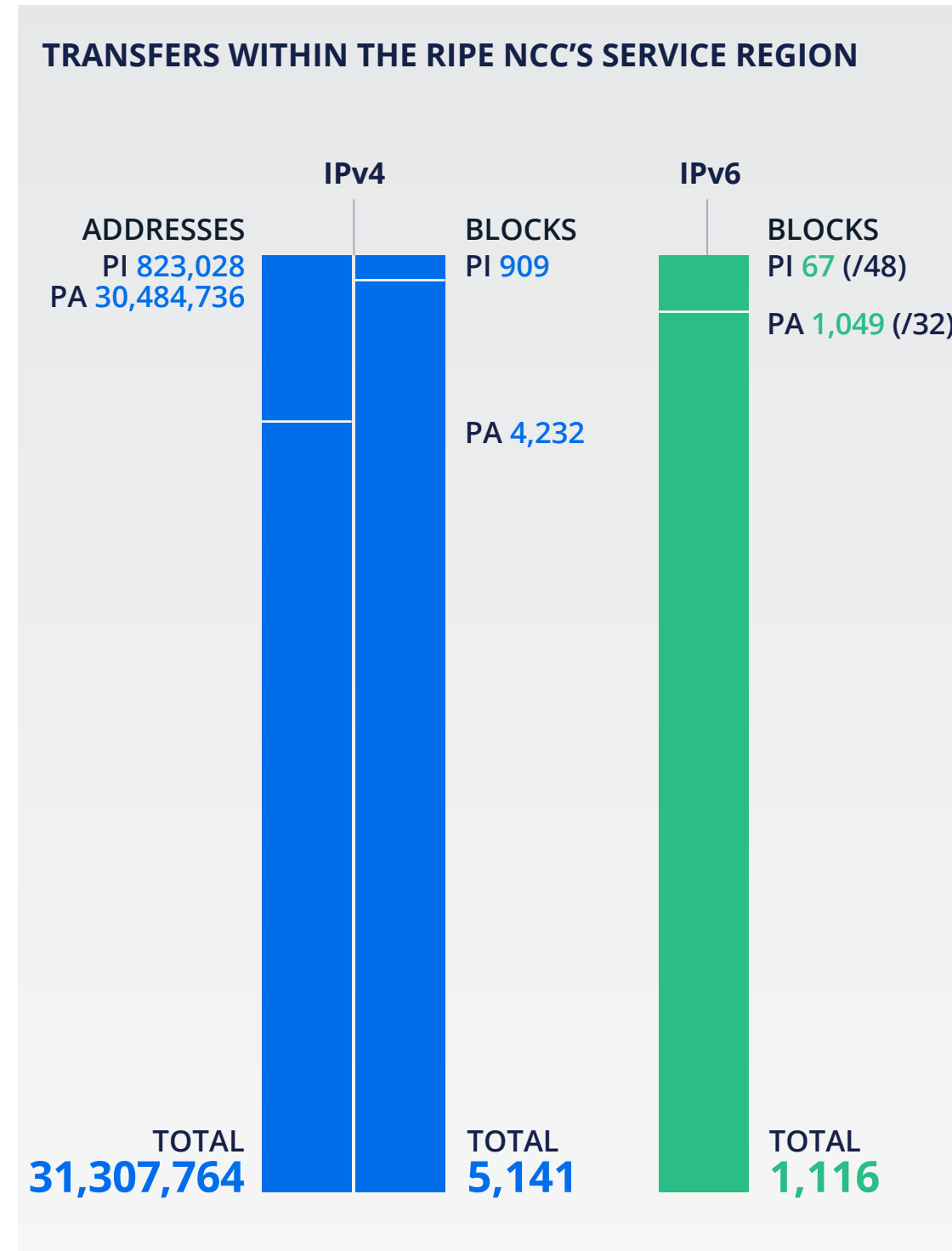
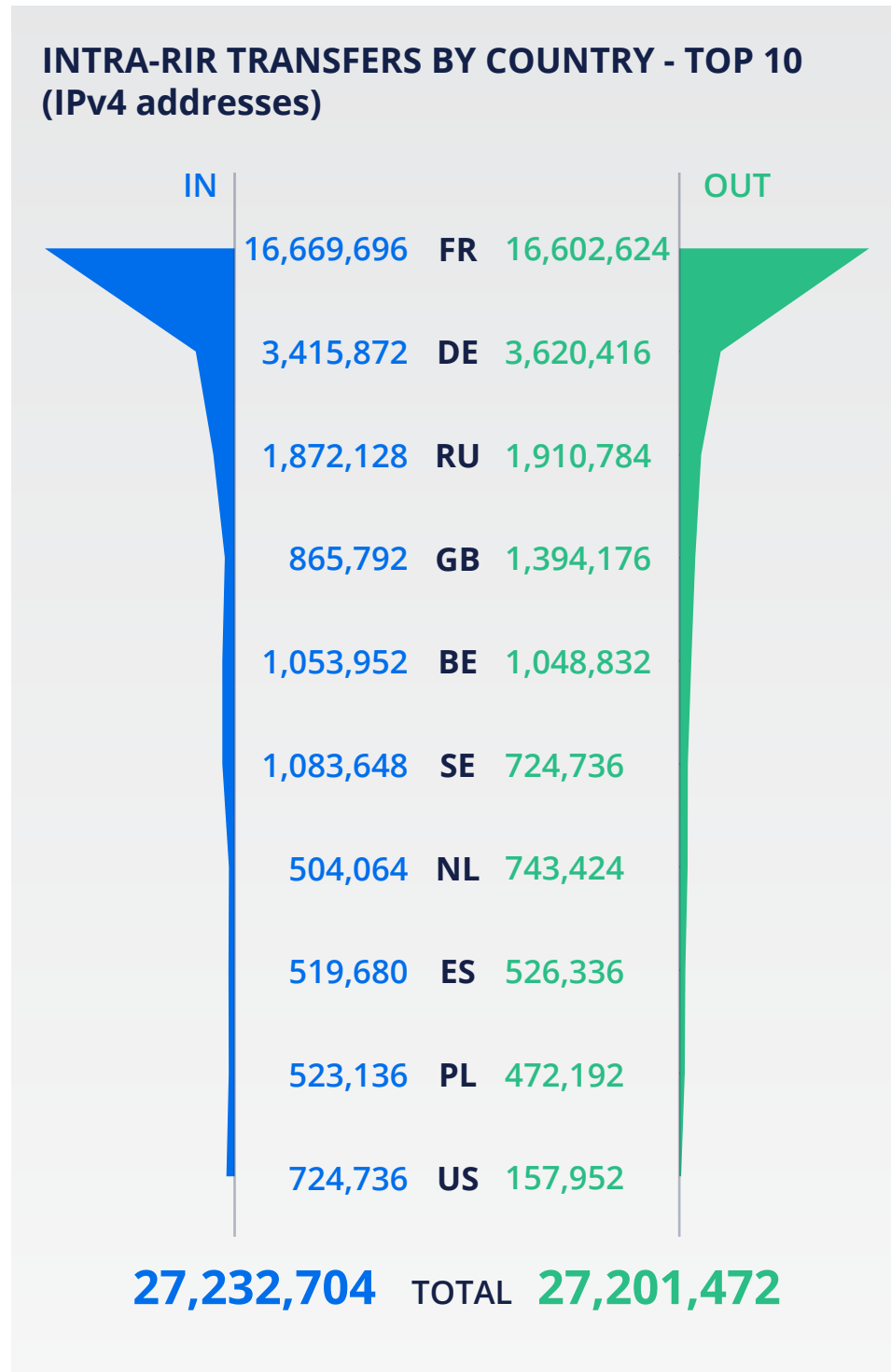


ALLOCATIONS AND ASSIGNMENTS



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 an internal shifting of resources (e.g. mergers and acquisitions).



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 a member'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 2022, we continued to implement the Abuse Contact (abuse-c) management policy and validated over 84,873 email addresses. 2,202 of those required manual intervention.

[READ MORE](#)

IN 2022

1,693 ARCs completed

66,706

abuse-c ROLE objects created and/or updated

84,873

email addresses validated

82,671

validated using an automated process

2,202

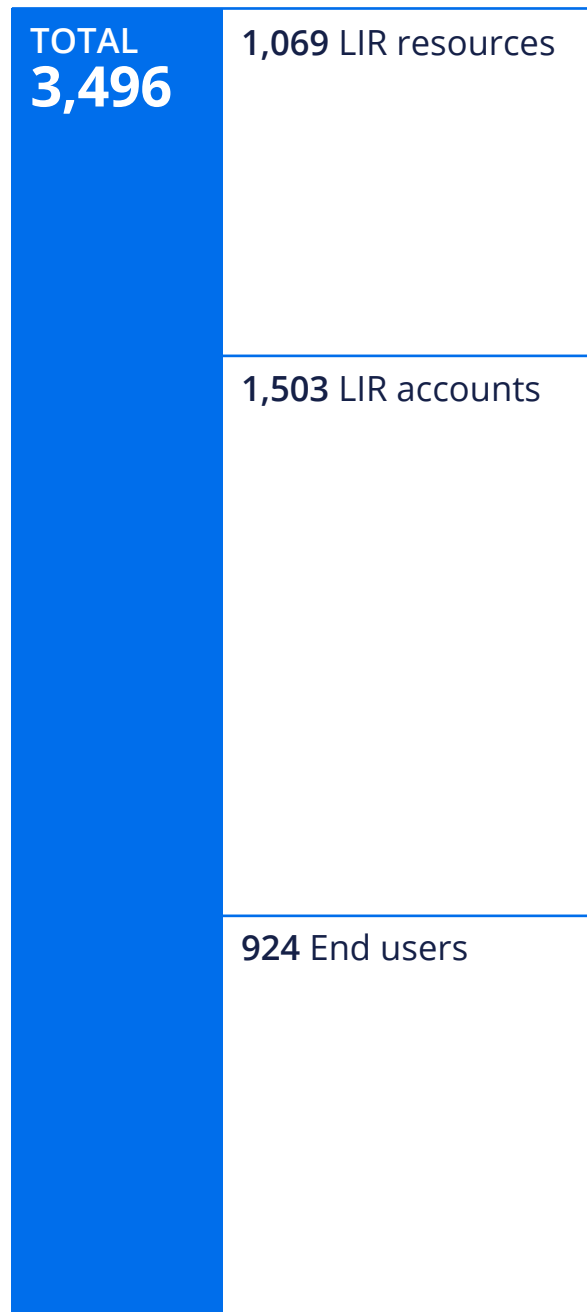
required manual intervention

REPORTS AND INVESTIGATIONS

REPORTS RECEIVED VIA THE ABUSE FORM



ABUSE-C VALIDATION INVESTIGATIONS



RIPE NCC SECURITY INCIDENTS

Security incidents are detected through alerts from our security monitoring systems, internal and external reports and security testing activities.

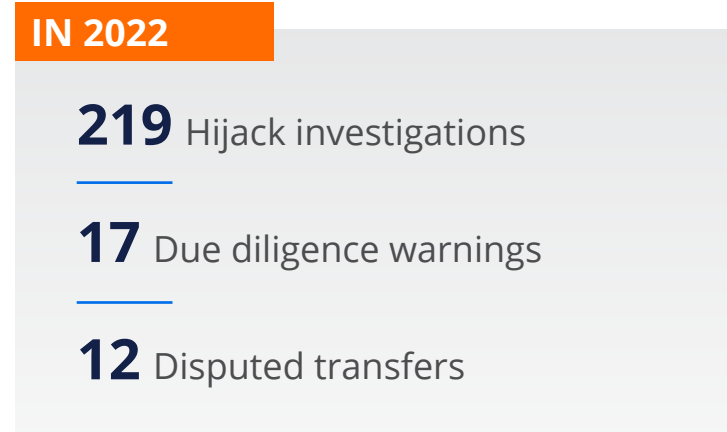
SECURITY REPORTS

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



[READ MORE](#)

HIJACK INVESTIGATIONS



RIPE DATABASE UPDATES

Here are some of the updates we made to the RIPE Database in 2022:

COMPLETED

Implementation of Numbered Work Item 10 (NWI-10) Definition of Country (added legal country for End User organisations with resources).

Implementation of NWI-19 Change to AS-SET object naming rules.

Impact analysis for UTF-8 in the RIPE Database.

Migration of RIPE Database documentation to a new website.

Draft Service Criticality definition for the RIPE Database.

Contribution to NWI-12 NRTMv4 RFC draft (and implementation started).

IMPROVED

UI improvements to the web query page.

Improved RDAP compliance with RFC and other RIRs.

Abuse-c is required for End User organisations with resources.

Set default maintainer on all top-level resources.

CLEANUP

Removed white pages.

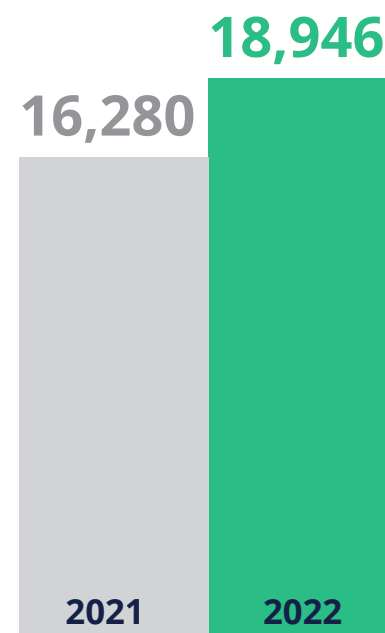
Removed Whois tags.

RPKI

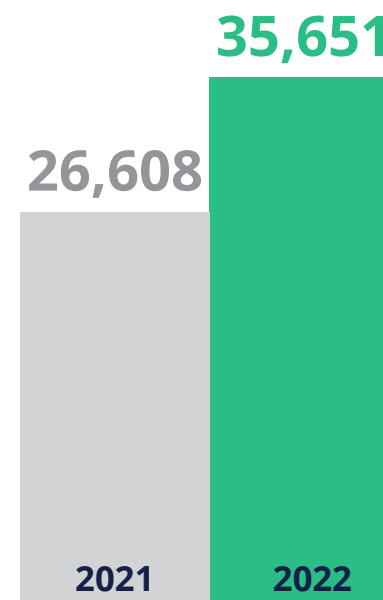
In 2022 we continued our focus on a safe, stable, and resilient Trust Anchor. One significant change has been in the end-to-end testing of our software and services.

READ MORE

RPKI CERTIFICATES



ROAs



HIGHLIGHTS

We released a publication service for our members that run their own Certificate Authority (“publish in parent”).

We asked a third party to perform a red team exercise against the RIPE NCC.

We migrated our off-line Trust Anchor to a new Hardware Security Module and ordered new online HSMs.

We released our RPKI software as open source to provide more trust through transparency.

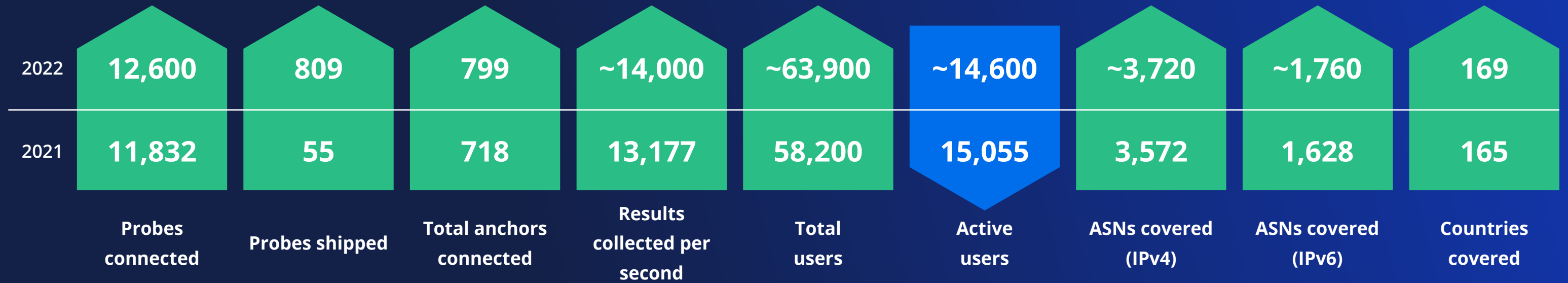
We added ASPA support in our pilot environment to support development of the standard.

We improved the resiliency of our repositories.



Information Services

RIPE ATLAS PROBES AND ANCHORS



RIPE ATLAS

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

In 2022 the growth of the network was mostly fuelled by the installation of more software probes and anchors. In the second part of the year we started distributing hardware probes and increased both the number of connected probes and covered networks. During the year we also started changing the software probe package to match more closely what professional package maintainers require; over time we expect this will result in the inclusion of the package in various Linux distributions, making it easier to install and manage.

During the year we restarted work on the RIPE Atlas user interface, modernised parts of the APIs, stabilised data delivery (bulk downloads and streaming) and revamped the documentation pages. We also started looking at hosting our big data backend using cloud services and renewing our support interface for ambassadors.

[READ MORE](#)

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.

We continue to improve resiliency and availability of both services by adding hosted nodes. This has been made possible by an improved Hosted DNS app, that allows us to accept applications for hosting both K-root and AuthDNS. Additionally, we are accepting applications to run this service on virtual servers, which makes it easier to deploy them in some places.

In 2022, we brought up five new AuthDNS nodes, bringing the total number of nodes to 14. These serve zones for reverse delegations for RIPE NCC member allocations, country code Top-Level Domain (ccTLD) secondary services and RIPE NCC authoritative zones. In the K-root cluster, 11 instances were added, while one instance was decommissioned, bringing the total to 100.



LEGEND

| | |
|-----------|------------|
| ▲ AuthDNS | ● Existing |
| ● K-Root | ● New |

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.

READ MORE



IN 2022

Total number of requests to the Data API

23,607,360,913

Visits from unique IP addresses

1,520,572

Number of visitors' countries

137

HIGHLIGHTS

Released new features based on RPKI data

For example, RPKI ROA/VRP information has been added to our Routing Consistency UIs.

Greater focus on service quality

We developed a custom test framework to help find code bugs.

Released improvements and new use cases in the new UI

For example, BGPlay was moved to the new UI.

Released a new blacklist feature

Blocklist information from DNS-based blocklists are shown in real time in our UIs.

RIPE NCC Open House on RIPEstat

The RIPEstat developer team engaged with users at this RIPE NCC-organised event.

Optimised backends

Calls to RISwhois and for abuse contacts now return up to 10 times faster.

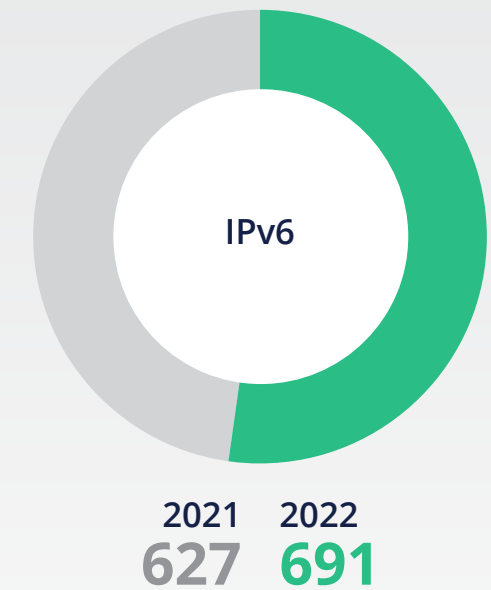
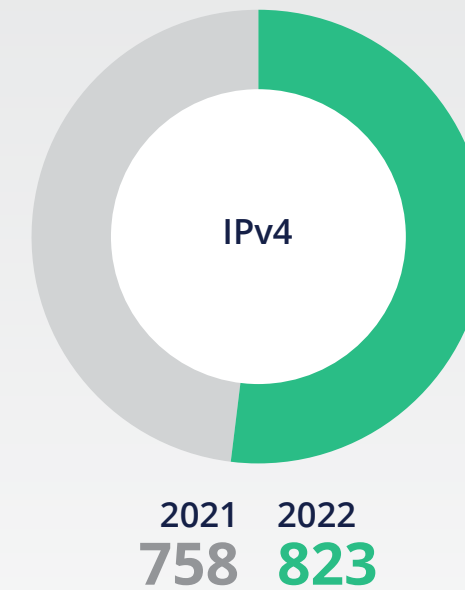
RIS

The Routing Information Service (RIS) collects routing data from several key locations. We run this globally distributed system to gain insight into the Internet routing system.

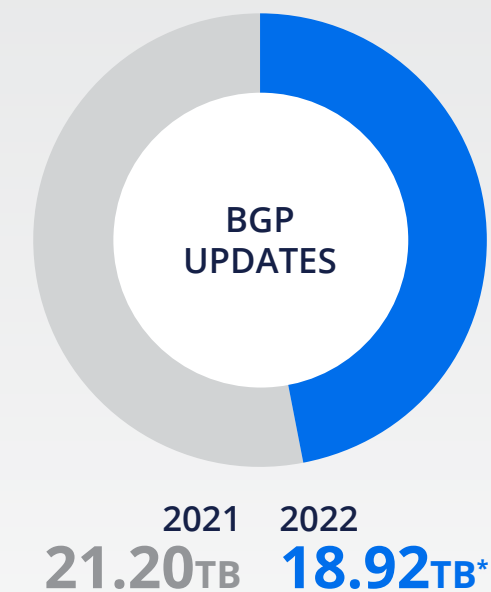
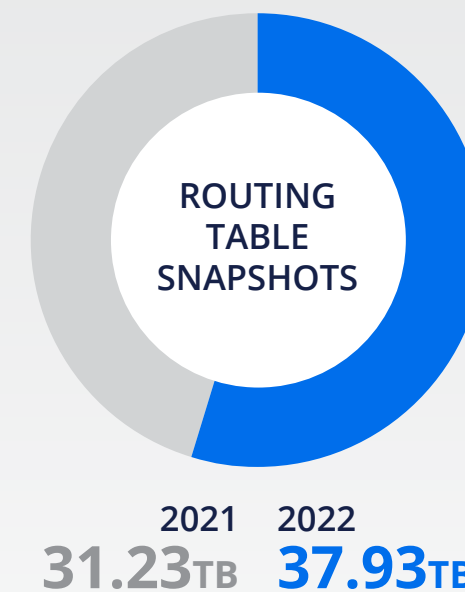
This is used both in RIPEstat and in many external systems to debug and monitor Internet routing. In 2022, we improved the documentation for RIS (<https://ris.ripe.net/docs/>) and made data delivery more timely and predictable.

READ MORE

BGP SESSIONS FEEDING RIS



DATA VOLUME

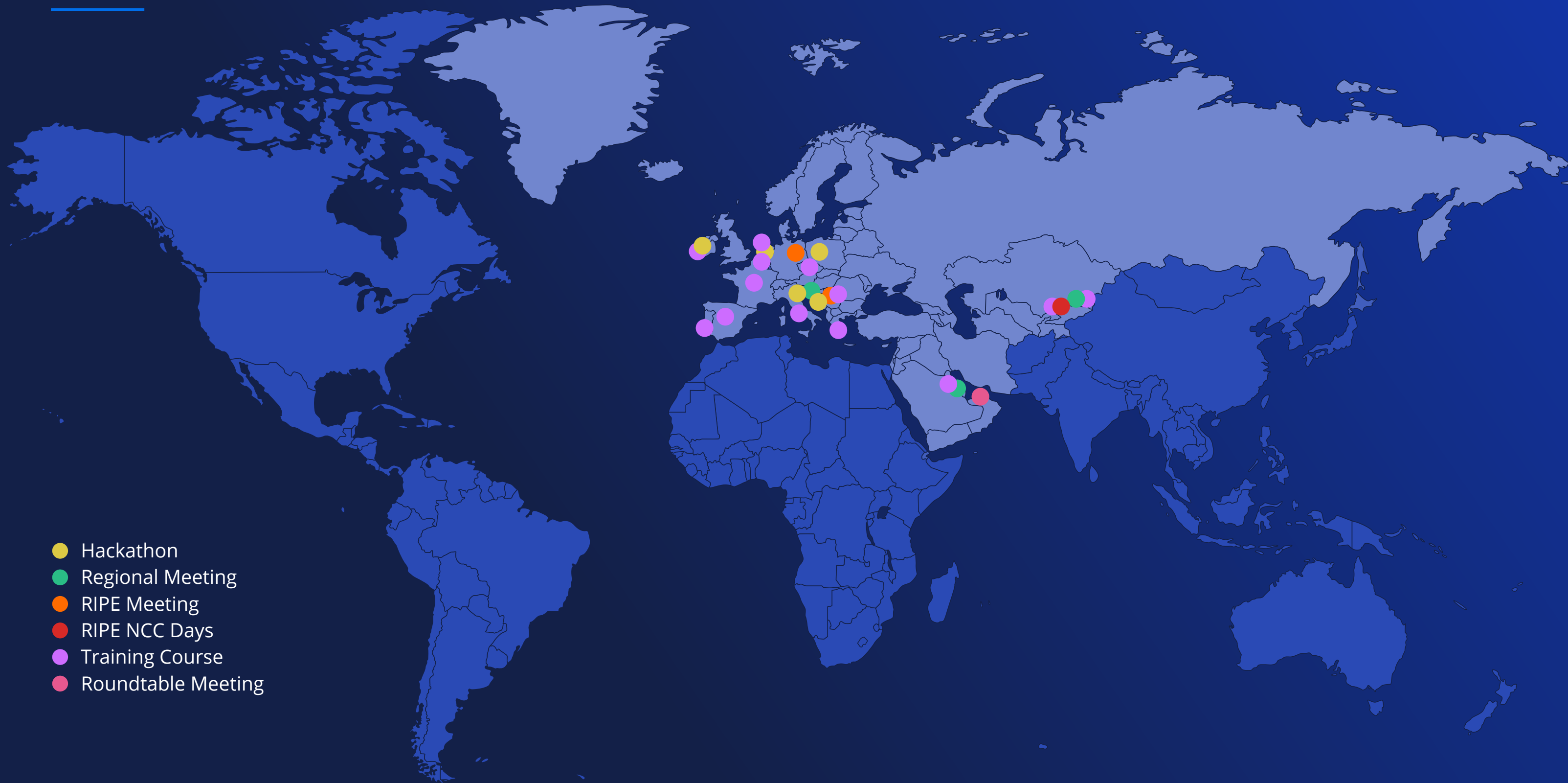


* The volume of BGP updates decreased (relative to the previous year) due to an increased focus on data quality, even though the number of peers and routes grew.



Community and Engagement

OUR IN-PERSON EVENTS IN 2022



LEARNING AND DEVELOPMENT

In 2022, we were excited to finally be able to give face-to-face training sessions again. In April of 2022, we hosted our first in-person training course in Amsterdam since the pandemic started.

The response was positive, and soon after we could increase the number of face-to-face sessions, ending the year with 13 total trips. Rather than prioritising the development of new training options, we are also focusing on quality. As part of this we ended our support for some webinars (such as RIPEstat Data API, RIPEstat and IPv6 Prefix Calculation).

In addition to our regular webinars and courses, we also carried out six IPv6 Fundamentals and Security Assisted Learning Sessions with the Dutch and Iraqi governments with the help of our RIPE NCC Academy and Certified Professionals exams.

[READ MORE](#)

IN 2022

Top 10 webinars

- BGP Security: IRR and Filtering
- LIRs: Managing IP Addresses and ASNs
- Introduction to IPv6
- Basic IPv6 Protocol Security
- RPKI Operations
- RIPE Database Applications
- Webinar for New LIRs
- IPv6 Security Myths, Filtering and Tips
- IPv6 Addressing Plan
- IPv6 Host Configuration

| Activity | Sessions | Participants |
|------------------------------|----------|--------------|
| Webinar | 42 | 903 |
| L&D Open House | 2 | 75 |
| Face-to-Face Training Course | 21 | 411 |
| Internal Training Programme | 22 | 384 |
| Workshop | 15 | 378 |

HIGHLIGHTS

Finally returned to face-to-face training course locations

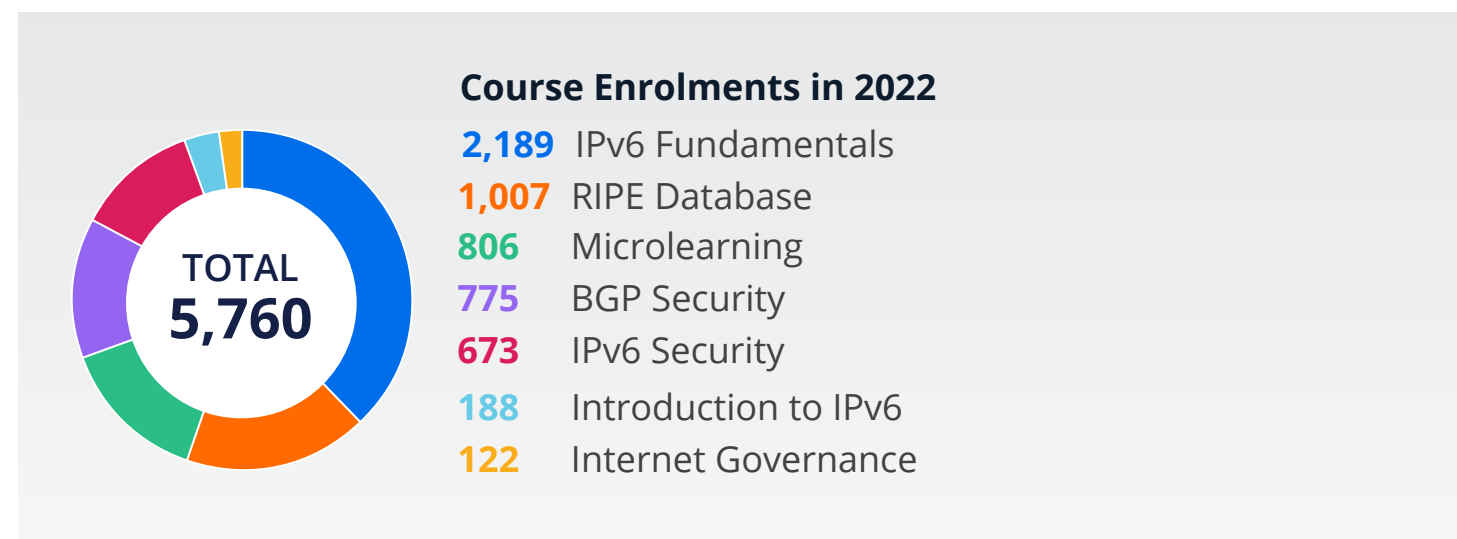
Continued Open House sessions

Delivered Assisted Learning Sessions with the Dutch and Iraqi governments

RIPE NCC ACADEMY

The RIPE NCC Academy offers free online courses on a number of important networking topics. Our Academy courses are also paired with corresponding RIPE NCC Certified Professionals exams, preparing learners to get certified in a particular skill.

This year, the RIPE NCC Academy launched three new e-learning courses: IPv6 Fundamentals, Internet Governance and BGP Security, which is paired with the BGP Security Associate Certified Professionals exam. We also added a Microlearning lesson this year called 'Why RPKI?'



[READ MORE](#)

RIPE NCC CERTIFIED PROFESSIONALS

A RIPE NCC certification validates expertise in the fields of IP address management, IPv6 technologies and network security.

Our certifications show the ability to use best practices in line with RFCs, as recommended by industry experts. RIPE NCC Certified Professionals earn a digital badge that can easily be verified by any third party, like your employer or customers.

We currently offer four certifications:

- RIPE Database Associate
- IPv6 Fundamentals - Analyst
- IPv6 Security Expert
- BGP Security Associate



In December 2022, we released the BGP Security Associate exam, which certifies the ability to implement appropriate security measures to protect BGP sessions. The new exam was also accompanied by the BGP Security e-learning course, which was launched in the RIPE NCC Academy. By the end of 2022, we were proud to see that our exam takers had earned almost 2,000 certifications.

604 badges were issued between 1 January and 31 December 2022, bringing us to a total of 1,917 certifications so far.

[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 2022. The data shown reflects the status of that policy and participation as of 31 December 2022.

In 2022, two policy proposals were submitted, and both were withdrawn following discussion:

- 2023-01 “Personal Data in the RIPE Database”, submitted to the Database Working Group, suggested allowing the publication of verified personal data in the RIPE Database only when justified by its purpose.
- 2023-02 “Remove mandatory IPv4 assignment registration in the RIPE Database”, submitted to the Address Policy Working Group, suggested changing the registration of IPv4 assignments from mandatory to optional.

Following various discussions, RIPE community members volunteered to work on:

- Reviewing the RIPE IPv6 allocations and assignments policy.
- Proposing policy changes for IPv4 temporary assignments’ minimum size, IXP assignments’ default size and the option for resource holders to temporarily prevent resource transfers.

[READ MORE](#)

POLICY PROPOSALS SUBMITTED IN 2022

2022-01 Personal Data in the RIPE Database

Status: Withdrawn November 2022

2022-02 Remove mandatory IPv4 PA assignment registration in the RIPE Database

Status: Withdrawn November 2022

PUBLIC AUTHORITY ENGAGEMENT

Our Roundtable Meetings offer governments and regulators the opportunity to discuss governance issues relevant to the RIPE NCC and the RIPE community while gaining a deeper understanding of complex technical topics.

In 2022, we held two Roundtable Meetings: one for stakeholders in Europe and another for stakeholders in the Middle East. In light of the political situation in 2022, we held other bilateral meetings with stakeholders in Ukraine, Russia and Central Asia rather than our regular approach of hosting a third Roundtable Meeting for stakeholders in Eastern Europe, the Caucasus and Central Asia.

Representatives attending these events discussed a variety of issues including ITU developments, Internet governance issues and public policies to stimulate technological development. These meetings highlight the importance of digital cooperation between the technical community and the public sector.

In 2022, we sponsored several Internet governance events, including the global IGF and regional/national IGFs (EuroDIG, SEEDIG, CAIGF and those in Serbia, Lebanon, Armenia and Georgia).

PUBLIC POLICY CONSULTATIONS

We contribute to various consultations led by different governmental and inter-governmental organisations involved in Internet governance and public policymaking that have the potential to impact our operations or those of our membership and the RIPE community. Such organisations have included various individual governments throughout our service region, the European Commission, the International Telecommunication Union (ITU), the Internet Governance Forum (IGF), the Organisation for Economic Co-operation and Development (OECD) and the Body of European Regulators for Electronic Communications (BEREC).

In 2022, we contributed a pledge to the IGF's Partner2Connect Digital Coalition Initiative and shared our views on the impact of Internet sanctions with the Dutch Ministry of Foreign Affairs.

The RIPE NCC joined the Partner2Connect Digital

Coalition to support Internet development, local technical communities and public policymakers in our service region by sharing the unique data we collect as a Regional Internet Registry. In our paper for the Dutch Ministry of Foreign Affairs, we helped to explain the impact of current EU sanctions on the RIPE NCC's operations and our members, as well as the broader impact that sanctions can have on the global Internet and in terms of undermining trust in the multistakeholder approach to Internet governance.

Regardless of the particular issue, we advocate for a multistakeholder approach to Internet governance and focus on protecting the Internet's core technical functions, the role of the global RIR system, and the technical community's role in operating the technical layers of the Internet.

[READ MORE](#)

SUPPORTING THE COMMUNITY

RIPE FELLOWSHIP

Through the RIPE Fellowship, we aim to increase diversity in the RIPE community by supporting those from underrepresented regions, minority backgrounds, or those who require 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 Internet technology or related topics of interest to the RIPE community.

- RIPE 85: **15** Fellowships Awarded
- CAPIF 1: **24** Fellowship Awarded
- MENO 22: **8** Fellowships Awarded

There were no fellows at RIPE 84 and SEE 10 because we were reluctant to make people travel while COVID restrictions were still in place in most countries.

[READ MORE](#)

RACI

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.

- RIPE 85: 4 RACI Attendees

[READ MORE](#)











OPEN HOUSE EVENTS

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

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 to attend and open to all. By creating a series of focused events, we offer our stakeholders insights into current issues at hand such as Internet Security in Ukraine, and we give the community space to offer their feedback, as in the sessions on our User Interface and RPKI Data. All of these sessions are recorded and available online.

[READ MORE](#)

TOP 10 OPEN HOUSE SESSIONS OF 2022

| | |
|------------------------------|---|
| RPKI Data |  |
| User Interface |  |
| Meet the EB Candidates |  |
| Internet in Israel |  |
| Internet Security in Ukraine |  |
| About Anti Abuse |  |
| RIPEstat |  |
| IPv6 Skills Gap |  |
| Internet in Central Asia |  |
| DNS4EU |  |

NOGS AND REGIONAL EVENTS

In 2022, we presented at the following NOGs:

- IRNOG
- UKNOF
- PLNOG
- ESNOG
- FRNOG
- FINOG
- CSNOG
- KZNOG
- Baykal NOG
- ITNOG
- NONOG
- RONOG
- GRNOG
- NLNOG
- NANOG
- HRNOG
- RSNOG
- LUNOG
- GENOG

■ Sponsored and Presented at ■ Presented at

SEE

The SEE 10/RIPE NCC Regional Meeting took place in Ljubljana, Slovenia from 11-12 April 2022. The meeting was hybrid and saw 144 people registered from 23 countries.



The event focused on topics related to the Internet in South East Europe, including:

- A presentation on the historical development of Internet in the region
- A panel discussion with local Internet pioneers, who shared their experiences building Internet infrastructure in former Yugoslavia
- Updates from local IXPs on peering and interconnection

Other key topics were RPKI, IPv6 and Anycast, as well as an update on the Keep Ukraine Connected initiative.

[READ MORE](#)

MENOG

MENOG 22 took place from 4-8 December 2022 in Manama, Bahrain. This was the first physical MENOG meeting since 2019.

The event was held in English with Arabic translation available. The event saw 184 people checked in from 30 countries.

The meeting agenda included recent developments in BGP security and IPv6 in the region, as well as a panel discussion on how peering has developed in the Middle East over the past ten years.

The event also encouraged peering between participants with short peering personals presentations at the end of each session.

[READ MORE](#)



CAPIF

The first-ever Central Asia Peering and Interconnection Forum (CAPIF 1) was developed to support the needs of the Internet communities in Iran, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan. The meetings took place in Almaty, Kazakhstan from 16-17 November 2022 with 195 attendees from 15 countries.



As a landlocked region, Central Asia faces some unique challenges, but also has potential to serve as a crossroads of interconnection for other regions and countries, including China, Iran, Russia and the Caucasus. At the meeting, research on Internet measurements and connectivity in Central Asia was presented.

The meeting also included a panel discussion on the regulatory environment in Central Asia and talks on DNS, DDoS protection, routing security and peering economics, among other topics.

[READ MORE](#)

RIPE NCC DAYS

After a break due to the pandemic, RIPE NCC Days returned, this time in Tashkent, Uzbekistan from 22-23 September 2022. 136 people checked from 7 different countries. At the event, there was a presentation from the RIPE NCC about the state of the Internet in Uzbekistan, followed by several panels on topics such as:

- Current Internet development in Uzbekistan
- How to support more interconnection in the region
- IPv6 deployment needs in Central Asia
- Local community development initiatives

There were also many talks on useful measurements and tools, routing security and IP resource management.

[READ MORE](#)

INTERNET MEASUREMENT DAYS

In 2022, we continued with our Internet Measurement Days format and organised two online sessions for Serbia and Georgia with a total of 125 attendees.

[READ MORE](#)



RIPE 84

RIPE 84 took place in Berlin, Germany from 16-20 May 2022.

Our first hybrid meeting received 769 attendees from 61 countries. There were 228 newcomers and an average of 211 viewers online each day.

[READ MORE](#)

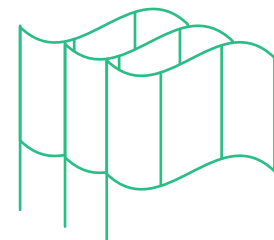


LOCATION
**BERLIN,
GERMANY**



ATTENDEES
ONSITE
769

ATTENDEES
ONLINE
185



COUNTRIES
61

HIGHLIGHTS

First in-person meeting in two years

A presentation on the “Keep Ukraine Connected” initiative received enthusiastic support from the audience

The DNS Working Group marked its 30th birthday

Gert Döring was presented with the Rob Blokzijl Award for his contributions to the Internet over the past 26 years



RIPE 85

RIPE 85 took place in Belgrade, Serbia from 24-28 October 2022.

494 people from 72 countries registered to attend RIPE 85. There were 202 newcomers and an average of 539 viewers online each day.

READ MORE

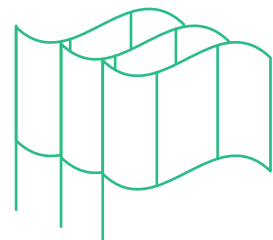


LOCATION
**BELGRADE,
SERBIA**



ATTENDEES
ONSITE
494

ATTENDEES
ONLINE
225



COUNTRIES
72

HIGHLIGHTS

Panel on the Internet Revolution in Belgrade

10-year anniversary of the World IPv6 Launch

Interesting discussions on the effects of the EU Cyber Resilience Act

Launch of the [RIPE NCC Translations Platform](#)

THE COMMUNITY PROJECTS FUND

Through the RIPE NCC Community Projects Fund, we aim 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.

There's no shortage of creative solutions in our community, and this fund gives innovators the chance to work on their project for 'the Good of the Internet'.

The RIPE NCC Community Projects Fund opened its call for applications in May 2022. The application period was open for just over eight weeks, and 39 applications from 20 different countries were submitted to the Selection Committee.

[READ MORE](#)

PROJECTS FUNDED IN 2022

Elevating Demand-side Cybersecurity Through Business Procurement
Wout de Natris

AI4NetMon 2.0
Aristotle University of Thessaloniki

Internet Standards Observatory
DNS Research Federation

ARTEMIS Lite
Foundation for Research and Technology - Hellas (FORTH)

Internet Identifiers in Time of War
iNGO European Media Platform

deSEC: Secure DNSSEC Hosting (Continued Operations and Development)
deSEC e.V.

Can We Extend IPv6? - A Measurement Project
University of Aberdeen

fpdns2: DNS Fingerprinting Tool
Grenoble Alps University

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 RIPE community, as well as trial prototypes of our tools. In 2022, we launched two major new initiatives on RIPE Labs:

The RIPE Labs Article Competition

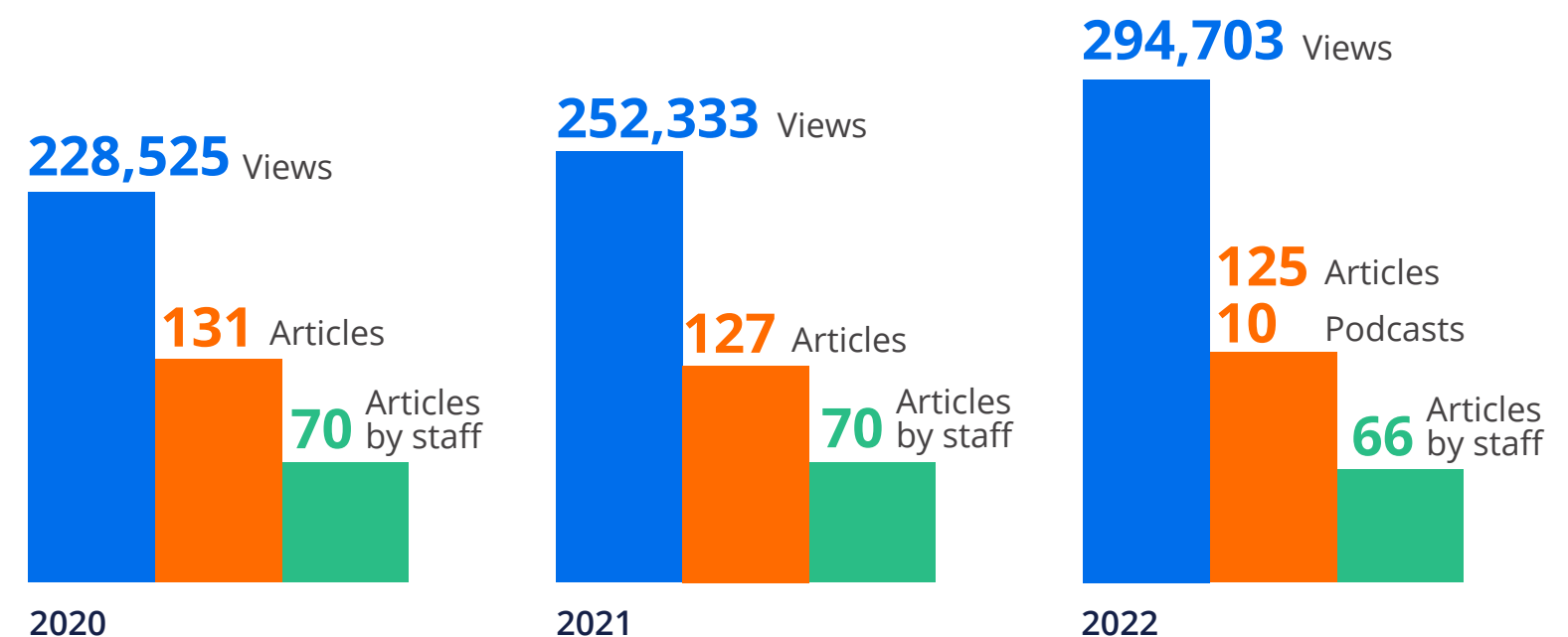
We held two competitions throughout the year, which received a total of 17 entries.

- **RIPE Labs Article Competition #1 - RIPE 84**
[Bias in Internet Measurement Infrastructure](#) -
Pavlos Sermpezis
- **RIPE Labs Article Competition #2 - RIPE 85**
[Where Did My Packet Go? Measuring the Impact of RPKI ROV](#) -
Koen van Hove

The RIPE Labs Podcast

Starting in April, we published 10 episodes of the new [RIPE Labs podcast](#) through 2022.

THREE MOST-READ RIPE LABS ARTICLES IN 2022



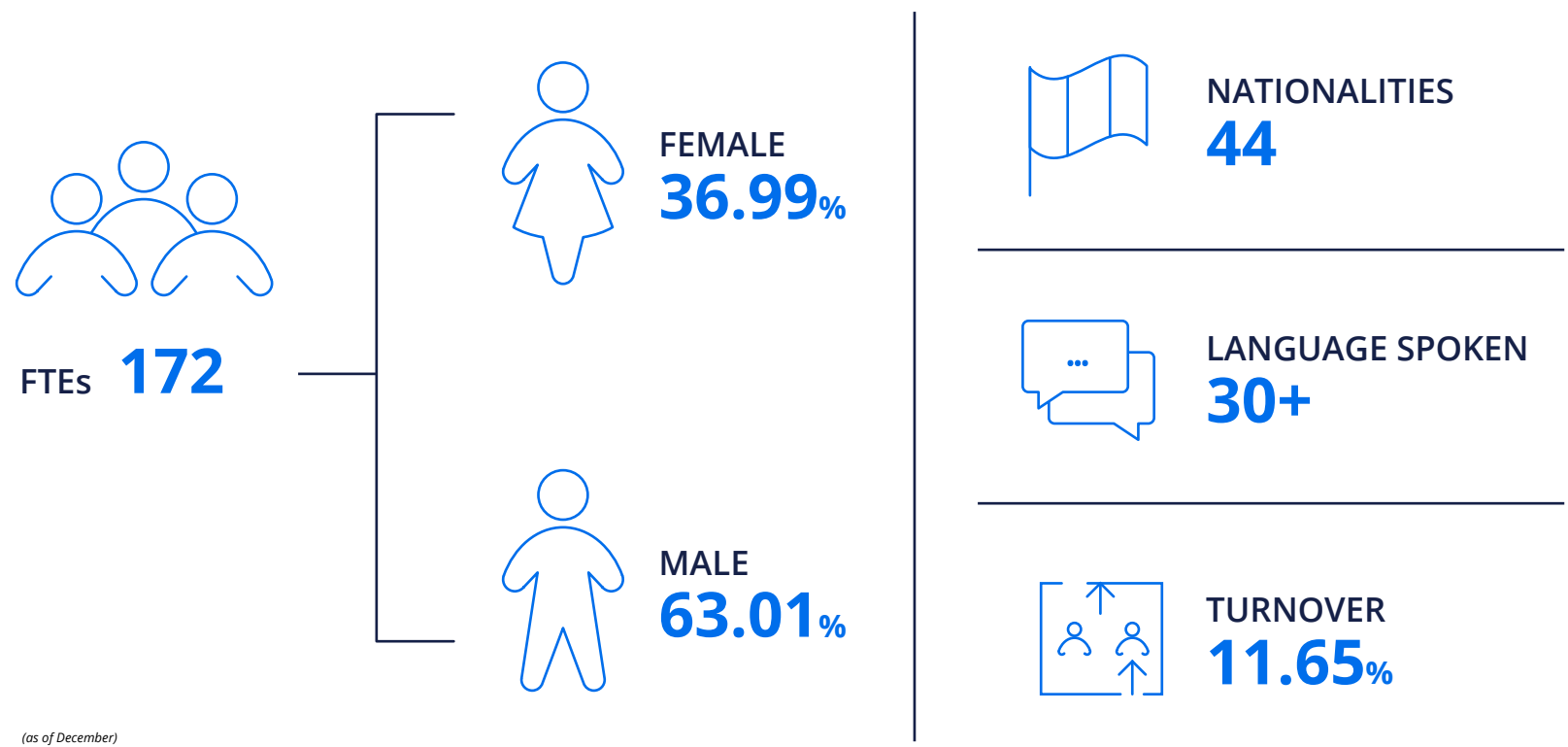


Inside the RIPE NCC

AT THE HEART OF THE RIPE NCC

In 2022, we had 172 FTEs on our team based in Amsterdam and Dubai. Our staff come from 44 different nationalities and speak over 30 languages.

READ MORE



(as of December)

COMPLIANCE AND TRANSPARENCY

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

CORPORATE GOVERNANCE

In 2022, we amended the following RIPE NCC legal documents:

- RIPE NCC Articles of Association
- RIPE NCC Certification Service Terms and Conditions
- RIPE NCC Certification Repository Terms and Conditions
- RIPE NCC Certified Professionals Service Terms and Conditions
- IPv4 Transfer Listing Service Terms and Conditions

We also created the following RIPE NCC legal documents:

- RIPE NCC Publish in Parent Service and Repository Terms and Conditions
- RIPE NCC Learning Events Terms and Conditions, which specifies the terms for registration and participation in a RIPE NCC Learning Event

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

[READ MORE](#)

ARBITRATION CASES

In 2022, one arbitration ruling was issued on a case initiated by a member against the RIPE NCC about our decision to terminate their Standard Service Agreement. Also, the Arbiters Panel approved our request for an IPv6 allocation according to the RIPE Policy "Allocating/Assigning Resources to the RIPE NCC". All arbitration rulings 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 2022, we received eight requests from individuals to delete their personal data. We complied with six of them and deleted the relevant personal data found in our systems.

In one case, we took no action as there were legitimate reasons to retain the relevant personal data. This consisted of contact information associated with a maintainer object in the RIPE Database. It is crucial that we retain this type of information in order to preserve the integrity of the RIPE Registry and demonstrate the chain of custody over Internet number resource registration.

The other request could not be completed as the requestor did not respond to our authentication requests.

SANCTIONS AND MEMBER RESOURCES

The 2022 Russian invasion of Ukraine led to a wave of sanctions from the EU against many Russian entities and individuals.

These sanctions significantly increased our workload, as we had to investigate a large number of alerts generated by our sanctions screening to determine which, if any, were legitimate sanctions cases. This included investigations to establish whether non-sanctioned members were owned or controlled by sanctioned parties. Since early 2021, updates to the EU sanctions list resulted in a total of 932 potential cases requiring our investigation, of which 348 were in response to Russia's war in Ukraine. Additionally, it was unclear at first whether Russian members could get payment to us due to sanctions against Russian financial institutions. To address this, we extended the payment deadline for Russian members' invoices until we determined that payment was possible, at which point we ended the extension.

For our Ukrainian members, we offered a payment extension on their invoices through 2022. To prevent any possible forced transfers of Internet resources due to the war in Ukraine or in any other region facing conflict, we have introduced a new voluntary lock function in the

Registry. This allows members to lock their resources and prevent them from being transferred for a six-month period. We developed this option following requests from Ukrainian members at RIPE 85 and on our mailing lists.

Alongside the new sanctions against Russian entities, we dealt with ongoing banking issues for our Iranian and Syrian members that carried over from 2021. As a number of organisations in Iran and Syria were subject to EU sanctions, uncertainty remained over whether our banks would accept payments from members in these countries. We have also offered payment extensions to these members until we can be certain that our banks will accept their payments. We are continuing to look for a long-term solution to this situation.

To stay up to date and maintain compliance with sanctions, we employ an automated sanctions screening process using third parties to run our due diligence checks. For all members who are found to be subject to sanctions, Dutch law requires us to freeze their registered resources in the

RIPE Database. However, we do not have to deregister these resources or terminate their memberships.

[READ MORE](#)

QUARTERLY SANCTIONS TRANSPARENCY REPORTS

To keep members informed, we publish quarterly sanctions transparency reports on how RIPE NCC members, End Users and legacy resource holders are affected by sanctions. In 2022, we published four reports:



ACTIVITY PLAN COMMITMENTS

In the table below, we list the commitments we made in our Activity Plan and Budget 2022 and how we lived up to those commitments. We do not include those commitments that are business as usual or that can be considered as continuing to carry out a high level of service in a certain area.

| # | Commitment from 2022 Activity Plan | Section | Status |
|---|---|--|---|
| 1 | Increase efficiency and improve response times for members | 1.2 Processing Registry Updates | In progress |
| 2 | Review our internal controls and control framework through external auditing and the definition of a control framework based on international standards (e.g. ISO / COSO) | 1.2 Processing Registry Updates | In progress |
| 3 | Automate much of the work related to sanctions checks | 1.4 Registry Accuracy and Investigations | In progress |
| 4 | Continue active registry monitoring for sanctions and improve Assisted Registry Checks | 1.4 Registry Accuracy and Investigations | In progress Active registry monitoring for sanctions remains in progress. Plans to improve Assisted Registry Checks through automation are on hold pending the completion of other projects. |
| 5 | Implement monitoring for changes in legal structure | 1.4 Registry Accuracy and Investigations | In progress |

| # | Commitment from 2022 Activity Plan | Section | Status |
|----|---|--------------------------------|---|
| 6 | Ensure the accuracy and integrity of the registry by working on compliance efforts for GDPR and EU sanctions, our automated registry monitoring and the use of digital identification | 1.5 LIR Portal | In progress Compliance efforts for GDPR and sanctions are in progress. We have adapted our billing-related software to accommodate the situation with sanctioned LIRs. We have completed the pilot for digital identification to see how to improve security and automation and are working on determining an ideal vendor solution. |
| 7 | Improve the ticketing system | 1.5 LIR Portal | Completed |
| 8 | Improve the security of internal and external services by adding features to the security of RIPE NCC Access, enhancing API security management and continuing audits of important applications | 1.5 LIR Portal | In progress To comply with sanctions, we are changing the vendor for our RIPE NCC Access security solution. Then we can enhance our API security management. We will also begin our security audits now that we have completed RPKI audits. |
| 9 | Scale up our repositories to improve availability and strengthen our core infrastructure | 1.6 RPKI | In progress We have nearly completed this project and only need to finalise the setup of our backup publication server. |
| 10 | Upgrade our HSMs (Hardware Security Modules), which hold our members' keys | 1.6 RPKI | In progress |



| # | Commitment from 2022 Activity Plan | Section | Status |
|----|--|-----------------------------------|--|
| 11 | Publish a transparent SOC 3 report of our findings | 1.6 RPKI | In progress |
| 12 | Look into ways to further increase the transparency of our trust anchor and certificate authority | 1.6 RPKI | Completed We made our core services in this area open source. |
| 13 | Focus on infrastructure, data accuracy and improvements to security and usability | 1.7 RIPE Database | In progress |
| 14 | Work on improvements to the search UI and the next-generation NRTM | 1.7 RIPE Database | In progress We have completed our improvements to the search UI and are in the process of improving our next-generation NRTM. We began implementation in Q4 2022. |
| 15 | Implement any necessary changes based on the RIPE Database Requirements Task Force's review of the purpose of the database | 1.7 RIPE Database | On hold We have created Numbered Work Items (NWIs) for the RIPE Database Working Group to help carry out the Task Force's recommendations. |
| 16 | Improve the infrastructure of the RIPE Database, aligned with our cloud strategy and with community involvement | 1.7 RIPE Database | In progress We have completed a draft service criticality document for the RIPE Database Working Group and asked the WG for comments. The next steps will be to create requirements based on the service incident impact severity. |

| # | Commitment from 2022 Activity Plan | Section | Status |
|----|--|------------------------------------|--|
| 17 | Increase the capacity of our current sites and possibly open a fourth location | 2.1 DNS and K-Root | In progress We had to postpone the fourth location for AuthDNS due to global supply chain issues but now expect to complete this work in Q3 2023. |
| 18 | Continue to work on user-friendly dashboards and APIs that make RIPE Atlas more intuitive to use | 2.2 RIPE Atlas | In progress |
| 19 | Maintain the network at its current level in terms of hardware probes and begin distributing the new version 5 hardware probes next year | 2.2 RIPE Atlas | Completed Distribution of version 5 hardware probes began in Q4 2022. |
| 20 | Pursue sponsorships to expand the network | 2.2 RIPE Atlas | Completed We invited more sponsors in 2022, but this effort will continue in 2023. |
| 21 | Introduce new features and visualisations to keep users engaged | 2.2 RIPE Atlas | In progress |
| 22 | Continue to evaluate the service and provide data using additional methods, such as publishing measurements via Google's BigQuery platform | 2.2 RIPE Atlas | In progress (always in progress) |
| 23 | Add different methods and approaches to RIPE IPmap to increase the amount of geolocated infrastructure components and the overall quality of the dataset | 2.2 RIPE Atlas | Completed We will continue these efforts in 2023. |
| 24 | Develop more automatic service monitoring | 2.3 RIPEstat | In progress Work started in 2022. |
| 25 | Make further improvements to the new UI | 2.3 RIPEstat | In progress Work on this started after RIPE 82. |

| # | Commitment from 2022 Activity Plan | Section | Status |
|----|---|--------------------------------|---|
| 26 | Continue reworking BGPlay | 2.3 RIPEstat | Completed We moved BGPlay to the new UI with a facelift and some other enhancements. |
| 27 | In consultation with the community, investigate moving some parts of RIPEstat to the cloud to provide a more efficient service and reduce latency | 2.3 RIPEstat | In progress Work on this started in 2021. |
| 28 | Migrate RIS data processing jobs to newer systems | 2.4 RIS | In progress |
| 29 | Develop our RIS peering strategy to improve the quality of our data collection and update the documentation on our website | 2.4 RIS | In progress |
| 30 | Continue to develop country or region-focused Internet reports and translate these reports into local languages | 2.5 Research | Completed We published two country reports in 2022. |
| 31 | Continue to collaborate with industry partners, like-minded operators and research institutions to provide a better understanding of Internet behaviour through direct partnerships with individuals or teams that are interested in Internet measurement | 2.5 Research | In progress (always in progress) |
| 32 | Continue to migrate data that was not business-critical to higher-level service outsourcing solutions, including cloud migration of infrastructure in accordance with our published cloud strategy | 2.6 IT Support | In progress This is a long-term project, but it was on track per our goals for 2022. |
| 33 | Complete the migration of our automation system to Salt, increasing our efficiency | 2.6 IT Support | Completed |

| # | Commitment from 2022 Activity Plan | Section | Status |
|----|--|--|---|
| 34 | Enter the second phase of our work on email infrastructure, with a focus on authentication, mailing list administration and mail flow | 2.6 IT Support | Completed |
| 35 | Due to public health restrictions, explore hybrid virtual/physical RIPE Meetings | 3.1 Community Building and Member Engagement | Completed |
| 37 | Look into reporting on the environmental and socioeconomic impacts of our engagement activities | 3.1 Community Building and Member Engagement | In progress |
| 38 | Modernise the way ripe.net displays and organises content as our main repository and interface with the world | 3.1 Community Building and Member Engagement | In progress |
| 39 | Continue our project to translate key information for members into five languages | 3.1 Community Building and Member Engagement | Completed |
| 40 | Use the new media room to experiment with other mediums such as videos and podcasts that may help us engage with the membership at scale | 3.1 Community Building and Member Engagement | Completed |
| 41 | Investigate whether alternatives to the mailing lists such as web forums can help improve engagement | 3.1 Community Building and Member Engagement | Completed |
| 42 | Return to face-to-face training courses, ensure the necessary safety measures for participants and trainers and revise our processes to align with national and regional regulations | 3.2 Community Learning and Development | Completed We started delivering face-to-face courses in April 2022, holding a total of 22 courses in 12 locations. |

| # | Commitment from 2022 Activity Plan | Section | Status |
|----|---|--|--|
| 43 | Continue delivering some training courses entirely through webinars and e-learning | 3.2 Community Learning and Development | Completed |
| 44 | Increasing our promotional efforts for our Certified Professionals programme and explore the possibility of running it as a cost recovery programme in the coming years | 3.2 Community Learning and Development | Completed We found that Certified Professionals was not viable as a cost-recovery programme. We have changed our strategy to make the programme smaller and more cost-effective, focusing on providing high-quality certifications. |
| 45 | Continue to deliver targeted events, such as our Roundtable Meetings for Governments and Regulators | 3.3 Community Coordination and Collaboration | Completed |
| 46 | Focus on more but smaller events that allow like-minded stakeholders to come together without the immediate need to focus on global disagreements | 3.3 Community Coordination and Collaboration | Completed We created the Central Asia Peering and Interconnection Forum (CAPIF) and resumed our RIPE NCC Days. |
| 47 | Continue to respond to public consultations and other opportunities to provide information and expertise to policymakers | 3.3 Community Coordination and Collaboration | In progress (always in progress) |
| 48 | Increase our outreach efforts to share the technical community's perspective regarding the potential impacts of proposals | 3.3 Community Coordination and Collaboration | In progress (always in progress) |
| 49 | Support a more hybrid way of working in 2022, with staff coming to the office to meet and collaborate but working from home remaining the norm | 4.1 Facilities | In progress We support a fully hybrid way of working. We are also working on increasing activities for staff at the office and improving our office setup. |

| # | Commitment from 2022 Activity Plan | Section | Status |
|----|---|--------------------------------|--|
| 50 | Review our current safety measures to make sure they match current and future regulations and change our office set-up if required | 4.1 Facilities | In progress We will work with the Information Security and Compliance department to complete an assessment of our current office security. Our Facility Coordinator will then make changes as needed. |
| 51 | Launch a leadership and talent development programme and improve our performance management | 4.2 HR | Completed We will continue the programme in 2023. |
| 52 | Investigate the possibility of working from locations outside the Netherlands, to the extent that this is possible within the limits of tax and other regulations | 4.2 HR | Completed We have set this system up with a third-party vendor and are already moving an employee to this setup. Our next action is to write a manual for this process. |
| 53 | Ensure that our procedures and framework remain up-to-date and in line with developments relating to GDPR and other applicable laws and regulations, including evaluating any third party cloud services we may use | 4.3 Legal | In progress (always in progress) |
| 54 | Update our service agreements as needed in line with our review of e-signatures | 4.3 Legal | On hold This was postponed due to other unexpected priorities in 2022 as a result of increased sanctions. |
| 55 | Continue to publish Sanctions Transparency Reports on a quarterly basis | 4.3 Legal | In progress (always in progress) |



| # | Commitment from 2022 Activity Plan | Section | Status |
|----|--|---|---|
| 56 | Make further improvements to our enterprise resource planning (ERP) system, AFAS Online, with a focus on our management reporting and project management | 4.4 Finance | In progress We are continuing to make improvements to our ERP system to make it more efficient. Our management reporting will be a continuing focus in 2023, while our project management efforts are on hold due to time constraints. |
| 57 | Work on a new charging scheme and related aspects, based on the principles that the Executive Board wishes to apply following consultation with the membership | 4.4 Finance | On hold We have postponed this project due to unrest in our service region. We will begin this work in 2023. |
| 58 | Share more detail about our security measures by publishing the results of formal external assurance reports aligned with frameworks such as ISO 27001 and SOC2/SOC3 | 4.5 Information Security, Risk and Compliance | In progress We initiated a gap assessment against the ISO 27001 framework in Q4 2022, with the aim to define key deliverables in Q1 2023. Throughout 2023 and 2024, we will be implementing our Information Security Management System, along with relevant information security policies and controls. |
| 59 | Continue providing a third-party assurance report for RPKI and the registry | 4.5 Information Security, Risk and Compliance | In progress |

| # | Commitment from 2022 Activity Plan | Section | Status |
|----|---|---|--|
| 60 | Update and improve our risk management framework to provide an agile and automated approach throughout the organisation | 4.5 Information Security, Risk and Compliance | In progress In 2022, we invested in recruitment efforts and organisational design to introduce an internal Risk and Compliance function, which is now operational. One of the prime objectives for the Risk & Compliance function will be the modernisation of risk management methodology across the RIPE NCC. During 2022, we developed a tailored risk rating matrix to enable a more objective and uniform approach to assessing risk. |
| 61 | Implement a bug bounty programme for some of our services to supplement our responsible disclosure policy | 4.5 Information Security, Risk and Compliance | Completed We have implemented and operationalised a private bug bounty programme. |



| # | Commitment from 2022 Activity Plan | Section | Status |
|----|---|---|--|
| 62 | Implement a Security Orchestration, Automation and Response system and extend the security team to 24-hour coverage alongside our IT and service operations teams | 4.5 Information Security, Risk and Compliance | <p>In progress</p> <p>A Security Orchestration, Automation and Response (SOAR) System has been selected and rolled out in our tooling ecosystem.</p> <p>Our next steps in 2023 will be to operationalise the SOAR system and deploy automated detection and response processes to increase efficiency.</p> <p>We are also investigating 24-hour coverage of security operations through managed response services for a subset of critical operations.</p> |
| 63 | Increase our cooperation with security organisations, most notably by supporting an independent TF-CSIRT | 4.5 Information Security, Risk and Compliance | <p>Completed</p> <p>RIPE NCC Managing Director Hans Petter Holen joined the Board of Commissioners of the Open CSIRT foundation, as the TF-CSIRT became an integral part of the newly founded autonomous foundation.</p> <p>Our Information Security team will actively participate in strategic TF-CSIRT discussions and contribute to their periodical meetings.</p> |

| # | Commitment from 2022 Activity Plan | Section | Status |
|----|---|---|--|
| 64 | Continue to support the Internet Number Registry System by participating in the Number Resource Organization (NRO) and contributing to strategy development | 4.6 Office of the Managing Director | <p>In progress (always in progress)</p> <p>RIPE NCC Managing Director Hans Petter Holen served as Vice Chair/Secretary of the NRO in 2022. During this time, the NRO developed a revised strategy with stronger joint commitment, to be finalised in 2023.</p> |
| 65 | Continue to support technical standardisation work in the IETF and follow and engage in global discussions in various Internet Governance Forums | 4.6 Office of the Managing Director | <p>In progress (always in progress)</p> <p>We participated in the standardisation of RPKI and DNS, the operational coordination of root name servers and other relevant areas in the IETF.</p> <p>We also participated in the Internet Governance Forum in 2022.</p> |
| 66 | Make a series of annual contributions to organisations that play an important administrative role in the global governance of the Internet | 4.6 Office of the Managing Director | <p>In progress (always in progress)</p> <p>We contributed to the Endowment contribution of the IETF and continued our ISOC membership. We also contributed to the NRO and its ICANN contribution for IANA number functions.</p> |
| 67 | Focus on the development and continuous improvement of leadership within the organisation alongside a review of our organisational structure to ensure it remains efficient and fit for purpose | 4.6 Office of the Managing Director | <p>Completed</p> <p>We conducted a leadership programme with the Executive Team and other leaders in the company.</p> |

OVERVIEW OF COSTS PER ACTIVITY IN 2022 (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 Expense 2022 | Actual Operational Expense 2022 | Variance 2022 | Actual Operational Expense 2021 |
|---|------------------------------------|------------------------------------|------------------|------------------------------------|
| The Registry | 9,100 | 9,391 | (291) | 8,508 |
| Registration of IP Addresses and ASNs | 350 | 357 | (7) | 457 |
| Processing Registry Updates | 2,000 | 2,340 | (340) | 1,839 |
| Member Administration | 800 | 1,081 | (281) | 920 |
| Registry Accuracy and Investigations | 1,700 | 1,364 | 336 | 1,380 |
| LIR Portal | 1,650 | 2,136 | (486) | 2,150 |
| RPKI | 1,950 | 1,555 | 395 | 1,173 |
| RIPE Database | 650 | 558 | 92 | 589 |
| Information Services | 7,000 | 7,568 | (568) | 6,502 |
| DNS and K-Root | 650 | 744 | (94) | 738 |
| RIPE Atlas | 1,300 | 1,579 | (279) | 502 |
| RIPEstat | 900 | 504 | 396 | 403 |
| RIS | 650 | 525 | 125 | 765 |
| Research | 450 | 499 | (49) | 483 |
| IT Support | 3,050 | 3,716 | (666) | 3,611 |
| External Engagement & Community | 9,050 | 7,854 | 1,196 | 5,523 |
| Community Building and Member Engagement | 5,050 | 4,840 | 210 | 2,042 |
| Community Learning and Development | 2,600 | 2,128 | 472 | 1,890 |
| Community Coordination and Collaboration | 1,400 | 886 | 514 | 1,591 |
| Organisational Sustainability | 9,200 | 8,822 | 378 | 7,856 |
| Facilities | 2,150 | 1,648 | 502 | 1,691 |
| HR | 920 | 1,149 | (229) | 1,065 |
| Legal | 900 | 1,046 | (146) | 744 |
| Finance | 1,400 | 1,440 | (40) | 1,443 |
| Information Security and Compliance | 1,850 | 1,332 | 518 | 915 |
| Office of the Managing Director | 1,730 | 1,897 | (167) | 1,815 |
| RIPE Chair | 250 | 311 | (61) | 183 |
| RIPE NCC (BEFORE BAD DEBTS AND DEPRECIATION) | 34,350 | 33,635 | 715 | 1,223 |
| Bad Debts | 250 | 265 | (15) | 152 |
| Depreciation | 1,000 | 710 | 290 | 1,071 |
| RIPE NCC TOTAL | 35,600 | 34,610 | 990 | 29,612 |

OVERVIEW OF COSTS PER ACTIVITY IN 2022

For 2022, the RIPE NCC's operating expenses are under budget by 990 kEUR:

- The Registry: 291 kEUR over budget
- Information Services: 568 kEUR over budget
- External Engagement & Community: 1,196 kEUR under budget
- Organisational Sustainability: 378 kEUR under budget
- Bad Debts and Depreciation: 275 kEUR under budget

Overall, we spent more than expected on staff costs as the labour market became increasingly tight and we invested in retaining and attracting talent across the RIPE NCC. This includes one-off inflation-related compensation, working-from-home allowances, 2022 bonuses, performance-related increases and incidental costs related to severance payments.

THE REGISTRY

These activities are over budget by 3.2%, which is due to the increase in staff costs mentioned above.

INFORMATION SERVICES

These activities are 8.1% above budget, partly due to staff costs. In addition, cloud and software costs were over budget in the IT Support activity. As a result, capital expenditure remained below budget, with depreciations 290 kEUR below budget.

EXTERNAL ENGAGEMENT & COMMUNITY

These activities are under budget by 13.2% due to the continued COVID-19 travel restrictions in the first quarter of 2022. This meant that it took us longer than expected to resume our in-person outreach activities.

ORGANISATIONAL SUSTAINABILITY

These activities are under budget by 4.1%. This is due to staff being able to work from home in 2022, which meant that the budget for facilities was not fully utilised. This also gave some breathing space to other activities such as Human Resources, with additional consultancy costs for recruitment in a tight labour market. However, the Legal activity was slightly over budget due to consultancy fees for legal advice on sanctions, and the Office of the Managing Director activity was over budget due to incidental severance payments.



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