



2023 Annual Report

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LACNIC

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LACNIC



Continuing to Add Value and Strengthen Ties in the Regional Internet Ecosystem

In 2023, building and strengthening our **relationships with various actors and pursuing continuous improvement** took on a leading role within LACNIC. In this context, I would like to highlight some initiatives that have become increasingly relevant.

This year, we finalized the creation of all courses for the **first specialization to be offered by the LACNIC Campus**. **LACNIC Campus** specializations offer structured technical training across different levels and allow those who successfully complete them to obtain a certification endorsed by LACNIC. Additionally, we continued to **support and promote regional leaders in the field of Internet governance** through our Policy Shapers program.

We increased our **engagement with government authorities from the countries in the region**, both by participating in regional and global events, as well as by organizing activities at Casa de Internet. Thus, together with our colleagues from the Technical Community, we welcomed the delegations participating in eLAC and Regulatel. The goal of these interactions is to promote the multistakeholder model to develop an Internet that is an effective tool for social inclusion and the economic development of our region.

Throughout LACNIC's more than 20 years of history, the number of members grew from 95 to over 12,650 and we implemented many changes within the organization. This evolution and adaptation also require a higher level of skills from the members of the Board of Directors. That is why this year we incorporated the **Regulations on Candidate Competencies and Suitability in the board election process**, which allows ensuring that individuals who occupy positions on the LACNIC Board have the competencies required to fulfill their responsibilities.

At LACNIC we take pride in reaffirming our commitment to concrete actions aimed at **strengthening Internet infrastructure**. A milestone worth highlighting in 2023 was the assignment of number resources to the B-root server managed by USC/ISI. This agreement also enables the deployment of B-root server copies in our region, all of which further contributes to improving the resilience of the global root server system. Likewise, we continue to install authoritative DNS and DNSSEC servers for reverse zones and domains at various Internet exchange points.



Alejandro Guzman, President

Our events are essential for strengthening capabilities, generating spaces for debate and sharing, and networking among the various stakeholders in the region. Both LACNIC 39 held in Mérida, Mexico, and LACNIC 40 / LACNOG 2023 held in Fortaleza, Brazil, **reminded us of the importance of face-to-face interaction**. LACNIC 39 set a new attendance record: its more than 760 in-person participants made it the most attended event in LACNIC's history. Additionally, LACNIC 40/LACNOG 2023 had the highest attendance among the events organized jointly with LACNOG (662 participants). They also showed the community's interest in discussion spaces such as the panel on IP address leasing, website blocks, or the impact of the Fair Share initiative we organized in Fortaleza.

Another highlight of 2023 were the **visits conducted by our team** to more than 90 **members** in Argentina and Ecuador. We also participated in various events across the region where we were able to speak directly with our members about how to further strengthen the services available today.

On behalf of the LACNIC Board, I would like to express our **satisfaction with the results achieved in 2023**. Examples include the fact that event participants expressed a general satisfaction level of 97%, while quarterly member surveys showed satisfaction levels of 93%. This confirms that we are on the right path, working to consolidate and improve our processes, building an increasingly professional organization focused on providing services and adding value to our members. An organization tailored to the Internet community of Latin America and the Caribbean.

About LACNIC

LACNIC is an international non-profit association incorporated in Uruguay in 2002. We are responsible for assigning and managing Internet number resources (IPv4, IPv6), Autonomous System Numbers, and Reverse Resolution for the region.

We contribute to regional Internet development through an active cooperation policy, promoting and defending the interests of the regional Internet community, and helping create conditions for the Internet to become an effective instrument for social inclusion and economic development in Latin America and the Caribbean.

Vision

We are building a regional community for a better global Internet.

Our Mission

We manage Internet number resources for Latin America and the Caribbean, maintaining standards of excellence and transparency and promoting the participatory policy development model.

We lead the permanent construction of the regional community, strengthening technological capabilities and applied research for the development of a stable, open Internet.



Who is Part of LACNIC?

LACNIC Board of Directors

<https://www.lacnic.net/web/lacnic/directorio>

Since January 2024, LACNIC is managed by an honorary Board comprised of eight directors (until December 2023, the LACNIC Board had seven members) who represent the organization and are responsible for managing the resources. They are elected directly by the vote of LACNIC members.

In 2023, the LACNIC Board was made up as follows:



Alejandro Guzman

President

Colombia

Term Ends:

12/2024



Evandro Varonil

Vice President

Brasil

Term Ends:

12/2024



Gabriel Adonaylo

Treasurer

Argentina

Term Ends:

12/2023



Wardner Maia

Deputy Treasurer

Brasil

Term Ends:

12/2025



Esteban Lescano

Secretary

Argentina

Term Ends:

12/2024



Carmen Denis

Deputy Secretary

México

Term Ends:

12/2023



Javier Salazar

Vocal

México

Term Ends:

12/2025



Oscar Robles

Executive Director

The role of the LACNIC Board has evolved and adapted to the regional market and the needs of our members over the organization's more than 20 years of history. We have grown from 95 members in 2002 to more than 12,600 today, and this has led to various changes, among them our capacity for execution. Thus, in 2023, LACNIC **increased the level of competencies required of the members of the board.**

We incorporated the **Regulations on Candidate Competencies and Suitability** in the board election process. The goal of this document is to define the criteria under which the candidates running for LACNIC's bylaws-mandated elected bodies will be evaluated. The purpose of this process is to guarantee that the individuals who serve on the LACNIC Board have the proper skills and suitability required to fulfill their responsibilities in the performance of their duties.

<https://blog.lacnic.net/institucional/la-evolucion-del-rol-del-directorio-de-lacnic>

Fiscal Commission

<https://www.lacnic.net/1202/1/lacnic/comision-fiscal>

The Fiscal Commission is LACNIC's control organ. It is charged with supervising that all accounting and administrative standards are met and overseeing compliance with the organization's legal and statutory framework. In 2023, the Fiscal Commission was made up as follows:



Adriana Ibarra

México
Term:
2021/2024



Aristóteles Dantas

Brasil
Term:
2022/2025



Hernán Arcidiácono

Argentina
Term:
2020/2023

Ethics Committee

<https://www.lacnic.net/2358/1/lacnic/comite-etica>

The Ethics Committee is the body responsible for interpreting, applying, and updating the [Code of Ethics](#) and the [LACNIC Community Code of Conduct](#), and can address cases that are beyond the authority of the organization's operational staff.

In 2023, the Ethics Committee was comprised of:

- Adriana Ibarra (Member of the Fiscal Commission)
- Esteban Lescano (Member of the LACNIC Board)
- Florencia Bianchi (LACNIC Staff)
- Nathalia Sautchuk (Community)
- Oscar Robles-Garay (LACNIC CEO)

Electoral Commission

<https://www.lacnic.net/1187/1/lacnic/comision-electoral>

The Electoral Commission supervises election processes and guarantees their transparency. It also analyzes candidate nominations considering the Regulations Regarding Incompatibilities, Capacities, and Suitability; solves any issues that may arise during an election process; validates vote counts; and announces final election results.

The Electoral Commission was instrumental in the successful introduction of the Regulations on Candidate Competencies and Suitability in the board election process.



Carolina Cofré

Chile
Term:
2021/2024



Cristóbal Chapital

México
Term:
2023/2026



Marcelo Corradini

Brasil
Term:
2021/2024



María José Franco

Paraguay
Term:
2022/2025



Nancy Cordova

Perú
Term:
2023/2026

Our Members

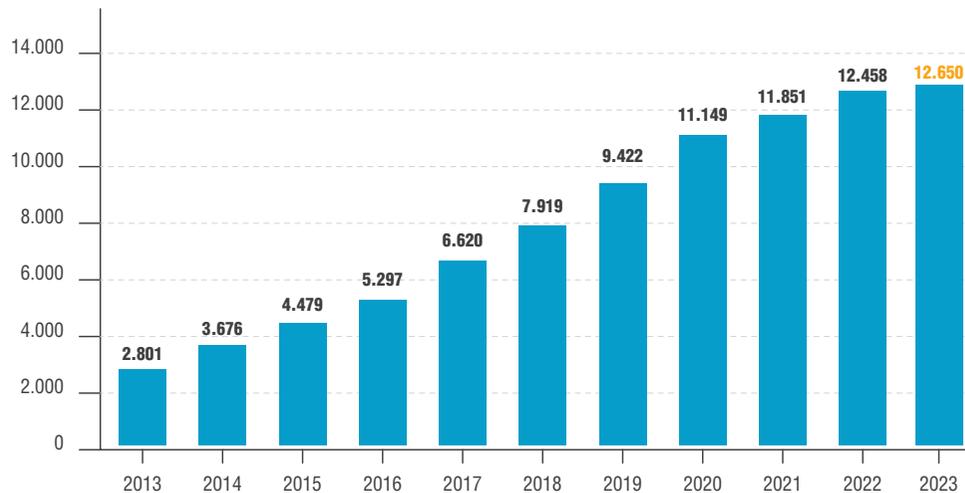
LACNIC members are Latin American and Caribbean organizations that have been assigned IPv4, IPv6, and/or ASN resources by LACNIC.

Our more than **12,650 members** include major Internet companies and organizations, as well as universities and organizations across the region that have received and hold number resources.

Growing Membership Base

This year, LACNIC reached a total of **12,650 member organizations**. The following chart shows the evolution of LACNIC's membership base in recent years.

Evolution of the number of Members



Visits to Our Members

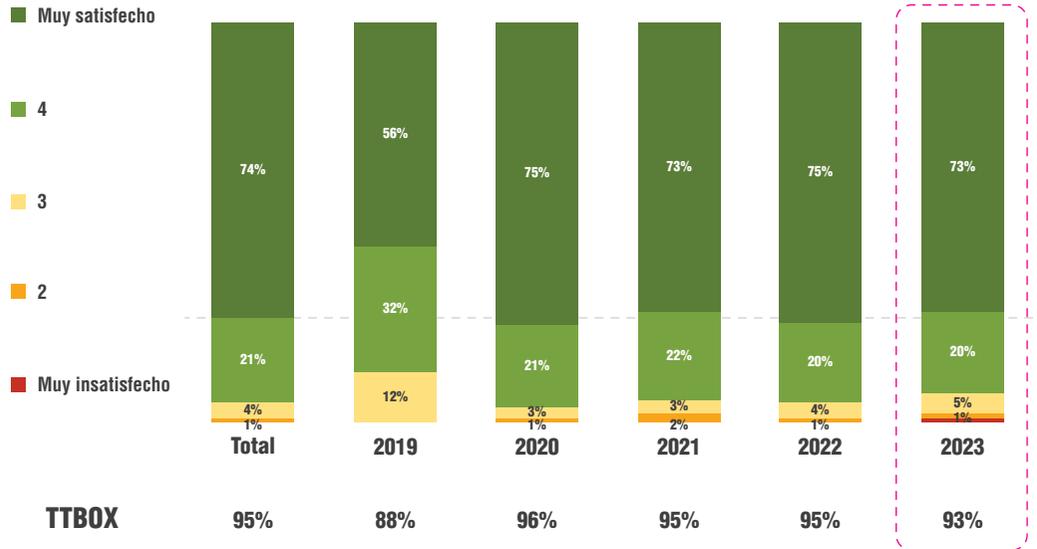
Since 2015, we have been visiting members both in person and virtually to gain a firsthand understanding of their needs regarding the services and benefits we offer.

In 2023, we visited a total of **90 members** in Argentina and Ecuador.

We also participated with a stand at various events: Feria Andina Link (Cartagena, Colombia), Expo WISP MX (Mérida, Mexico), Expo ISP (Quito, Ecuador), and the CANTO Event (together with ARIN). Attending these meetings allowed us to talk directly with a large number of LACNIC and community members.

Satisfaction Survey

In 2023, we conducted quarterly surveys that allowed us to measure the evolution of general satisfaction levels and propose improvements to our processes. The results of these surveys continue to reflect levels of excellence: at the end of the third quarter, the average satisfaction level among LACNIC members was **93%**, as shown by the top two rectangles.



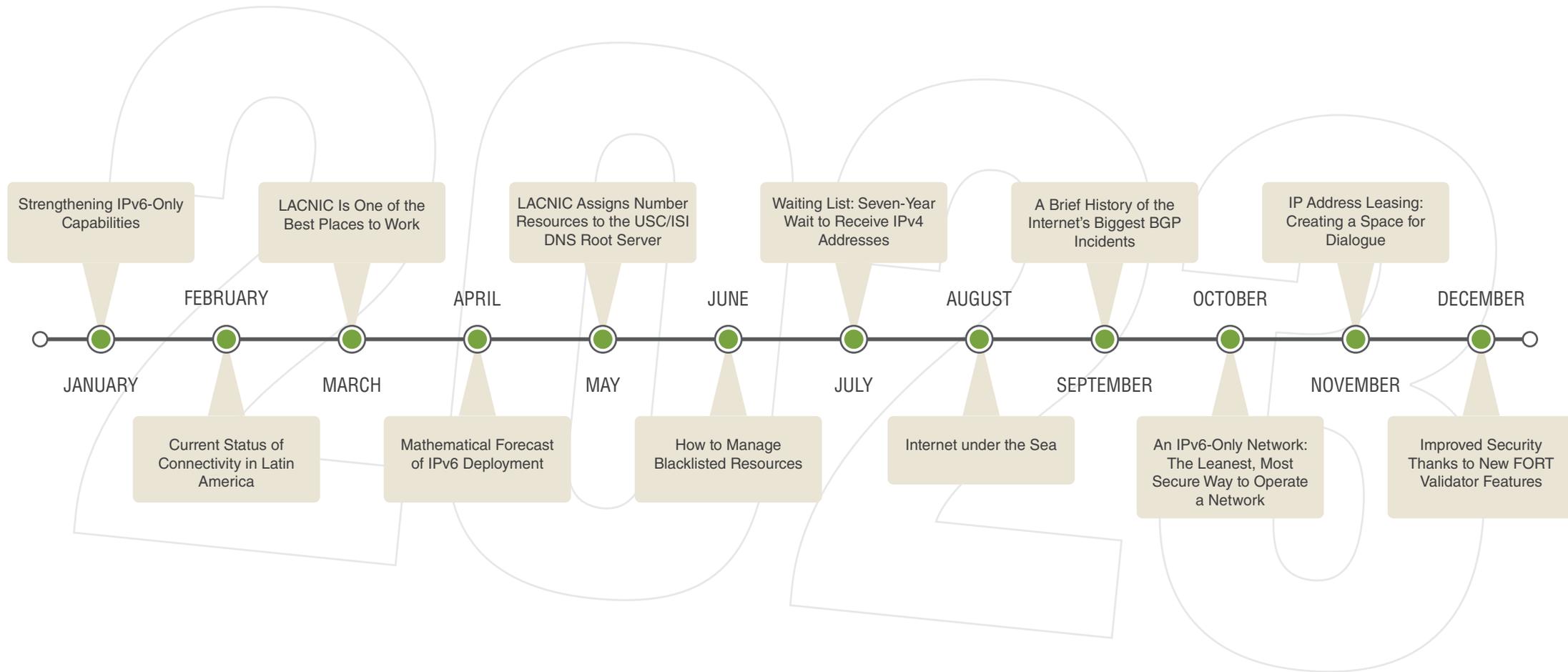
Our Team

Teamwork, commitment, the search for excellence, and caring for people are the values that identify LACNIC's organizational culture.

Thus, **for the eleventh consecutive year, we were honored as one of the best places to work in Uruguay** in the category of up to 300 employees. This time, LACNIC took the seventh place in the ranking prepared by international consultants Great Place to Work® (GPTW).

We also took the **fifteenth place in the ranking of Best Places to Work for Women in Uruguay**. This ranking recognizes organizations that stand out for their efforts to reduce the gap between men and women.

Highlights of the Year



Resource Management

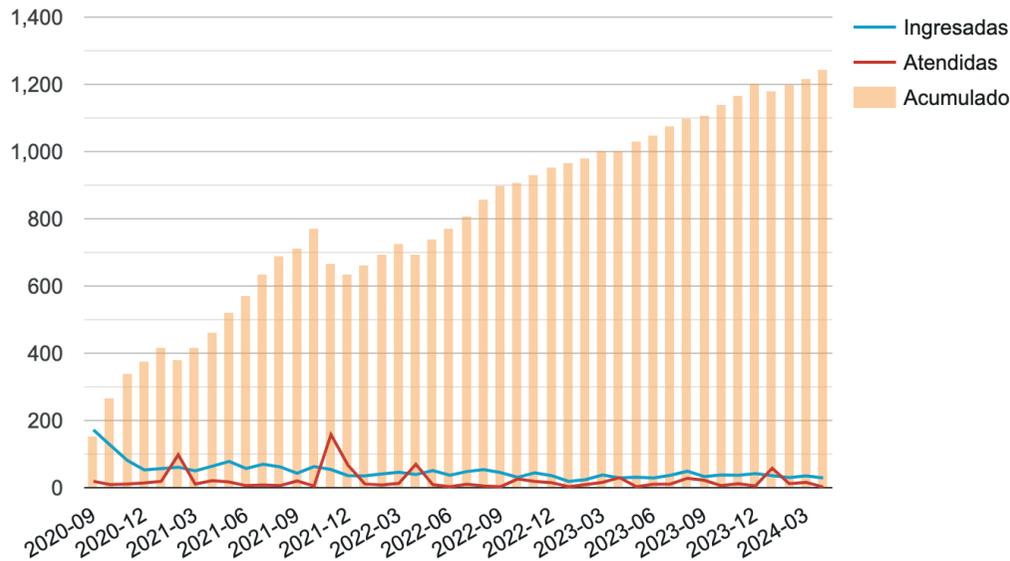


IPv4 Exhaustion

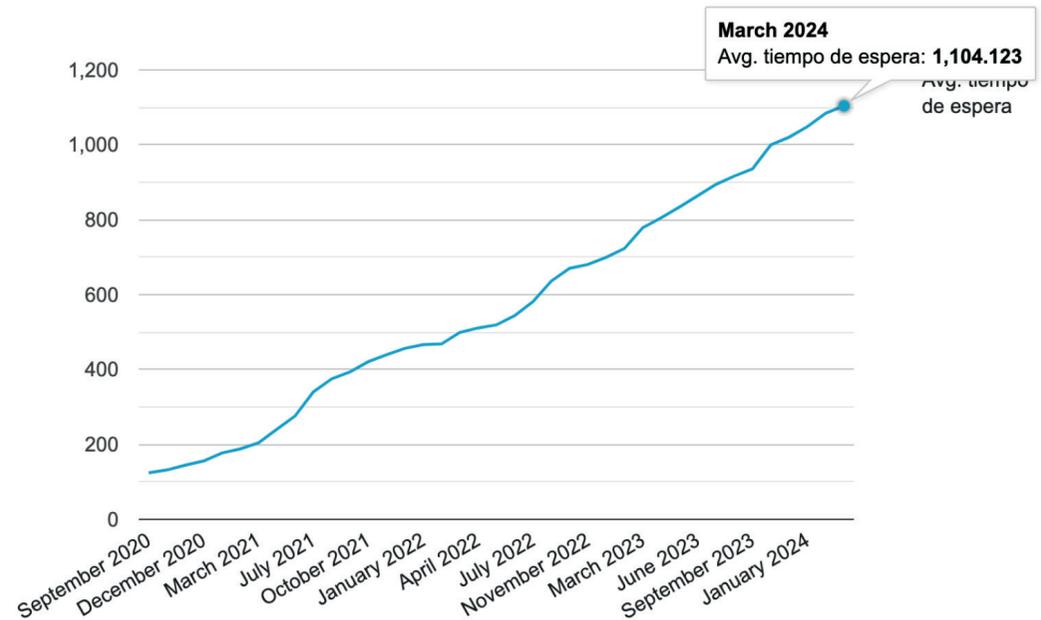
During 2023, we continued to adapt our processes to a context with a high number of IPv4 requests and little space available for assignment.

As a result of this situation, the wait list for receiving IPv4 addresses grew by 20% to include 1,145 organizations.

<https://www.lacnic.net/6334/1/lacnic/lista-de-espera-para-recibir-direcciones-ipv4>



In this scenario, the estimated waiting time for those who enter the list today is 7 years. Evolution of wait times for organizations that have already received IPv4 space through the wait list:

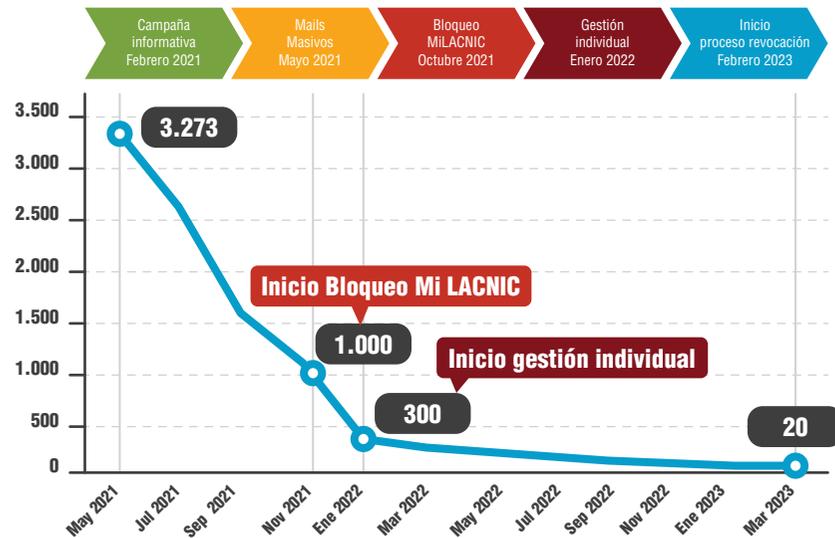


Policy for the Validation of Abuse Contacts

During 2023, we concluded the first cycle of the validation process, which has a total duration of two years. The final stage involved **individual phone calls with more than 300 organizations**. After concluding this first cycle, we were able to validate 100% of these contacts and did not need to revoke any resources.

In June 2023, we began our second validation cycle, which will follow the same process and conclude in **May 2025**.

Unvalidated Abuse Contacts



Policy for Managing Sub-Assigned IP Address Blocks

This year we implemented a policy that allows organizations receiving IP blocks to create ROAs for their sub-assignments. This guarantees accurate records and facilitates the creation and management of RPKI objects by the recipients, promoting transparency and efficiency in the IP resource management.

Assignment Statistics

In 2023, the number of resource requests remained **consistent with the levels corresponding to the years prior to IPv4 exhaustion**. On average, we handled **460 requests per quarter**.

Number of Requests per Quarter



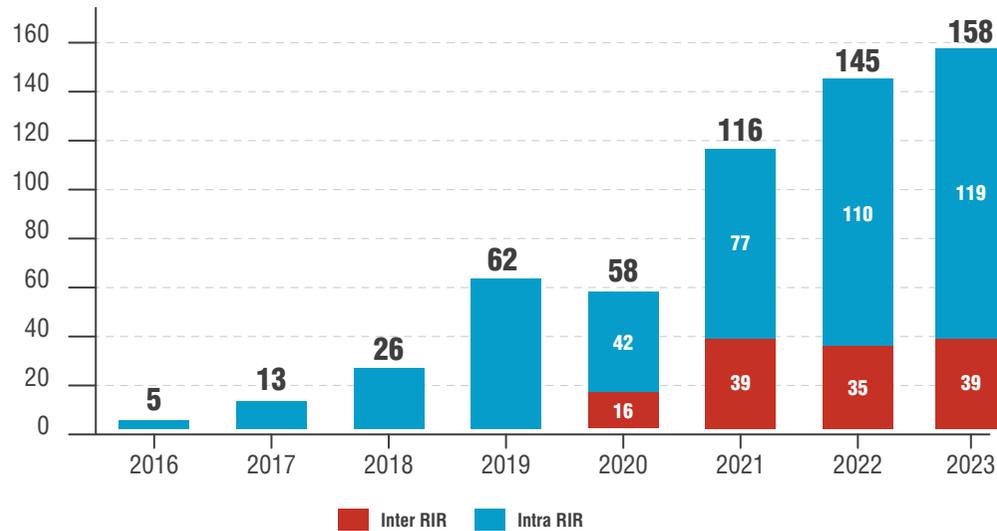
Collectively, the RIRs processed a total of 1,294 resource requests (IPv4, IPv6, and ASN), which represents a 1% decrease compared to the previous year. A total of 78,848 IPv4 addresses (96 assignments) were assigned, while the number of assigned autonomous systems was 583.

Inter- and Intra-RIR IPv4 Address Transfers

During 2023, a total of 159 address blocks were transferred, 9% more than the total number of transfers completed in 2022. However, the number of transferred IP addresses was significantly lower: approximately 50% of those transferred in 2022.

This variation in the number of transferred IP addresses can be attributed to two reorganization transactions between companies based in Chile and Brazil. These transactions, which occurred in 2022, involved the transfer of more than 250,000 IP addresses to the RIPE NCC.

Number of Transfers per Year



Throughout the year, we reached out to **43% of new members** to inform them about the rights and benefits included with their membership.



Community Participation Opportunities



The LACNIC community comprises more than **12,650 member organizations**, plus an extended community that includes a diverse group of individuals and organizations with an interest in regional Internet development.

Included below are some highlights of the activities we organized during 2023 to generate spaces for sharing and exchanging experiences and technical knowledge, provide networking opportunities, and allow participants to strengthen their skills.

Our Events

LACNIC organizes two annual meetings in the region for the purpose of facilitating the exchange of technical information and promoting the creation of synergies related to Internet development.

We also believe these meetings are important for strengthening technical capabilities and providing opportunities to meet and discuss various technical issues and current topics that are very relevant for the region.

This year, we received support from **30 sponsors**, **13 of which were participating for the first time**: QuattroCom, Fastly, Wit One, Arelion 1299, IP Architechs, Matrix Telcom, IENTC, Telxius, Angola Cables, CDN Star, Ascenty, Sage Networks, and Algar Telecom.



LACNIC 39

<https://lacnic39.lacnic.net/>

LACNIC 39 was held in hybrid format from 8 to 12 May in Mérida, Mexico, and was hosted by the Government of the State of Yucatan.

The extensive community participation exceeded our expectations: **761 participants attended the meeting in person, making LACNIC 39 the busiest event in LACNIC history.**

The event program included a panel on [the future of cybersecurity](#), seven technical tutorials, a special session specifically designed for local network operators, the LACNIC Annual Member Assembly, and the LACNIC Technical Forum with 21 technical presentations.





LACNIC 40 LACNOG 2023

<https://lacnic40.lacnic.net/>

LACNIC 40 LACNOG 2023 took place from 2 to 6 October in hybrid format, with the in-person portion of the event held in Fortaleza, Brazil. The event was hosted and co-organized by NIC.br. A total of 880 individuals participated in this event (662 in person and 218 online). This was the event with the largest number of **participants from the host country**, who accounted for **57%** of the total number of in-person attendees.

The event program focused on topics relevant to the community, including IP address leasing, website blocking, and the impact of fair share regulations.



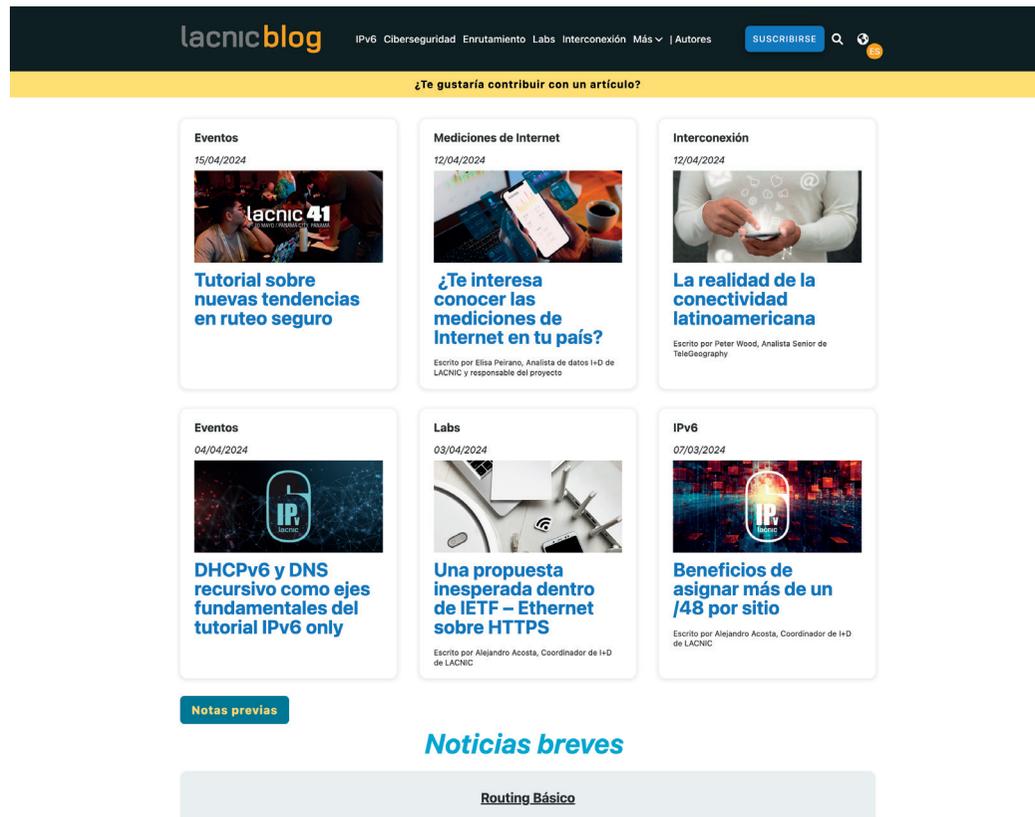
LACNIC Blog

<https://blog.lacnic.net/>

This year, we revamped our newsletter and transformed it into a blog featuring technical articles written by LACNIC staff members and experts from both our region and other parts of the world.

We also added the option to post comments on the articles, which generated an interesting exchange between the members of our community.

With over 30 authored articles published, we successfully established the LACNIC Blog as a go-to resource for current issues related to regional Internet development.



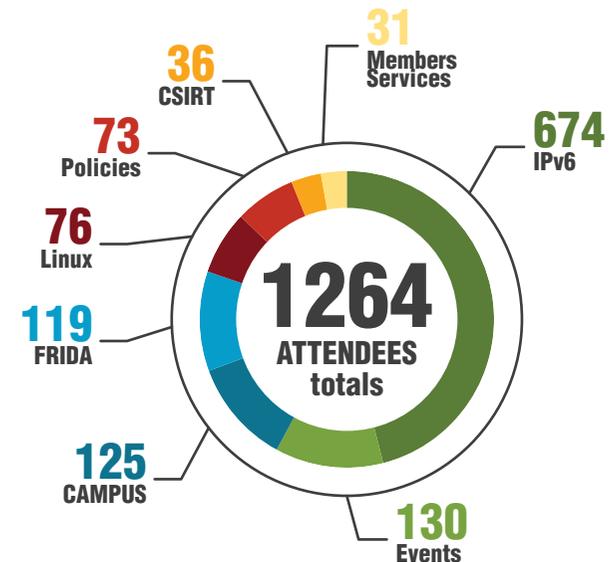
Capacity Building

LACNIC provides the community with ongoing support to help network operators, educators, regulators, and governments in the region develop their knowledge and technical skills on topics related to LACNIC's responsibilities. The LACNIC Campus is LACNIC's e-learning platform, and the organization also offers webinars on technical and institutional topics.

Webinars

<https://www.lacnic.net/webinars>

Throughout the year, we conducted 17 webinars on topics such as IPv6 and cybersecurity, which attracted over 1,260 attendees. Simultaneous interpretation services were provided for over **80% of the webinars** to ensure their accessibility.



LACNIC Campus

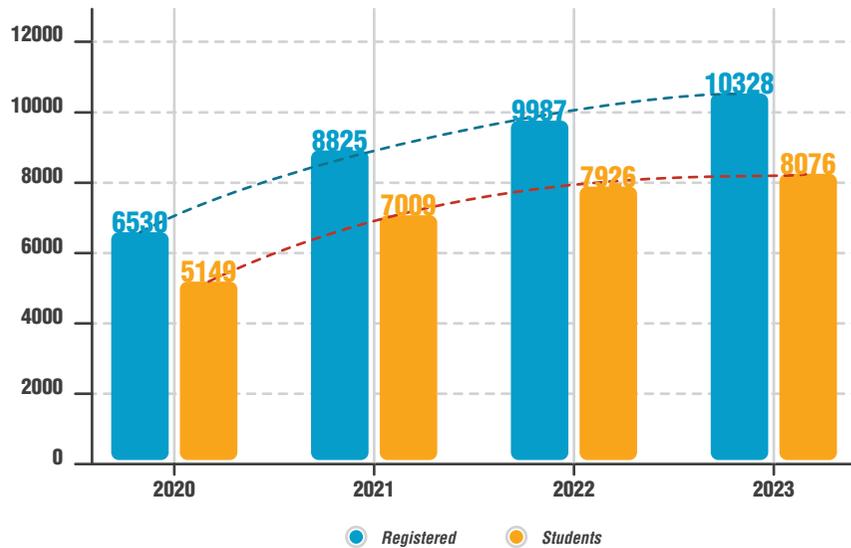
<https://campus.lacnic.net/>

The LACNIC Campus is an e-learning platform that contributes to the development of Internet knowledge and technical skills on topics such as RPKI, DNS, network management, Internet governance, IPv6, and others.

In 2023, we incorporated three new courses on BGP Security with RPKI and IRR, Interconnection of Public and Private Autonomous Systems, and Advanced Network Management.

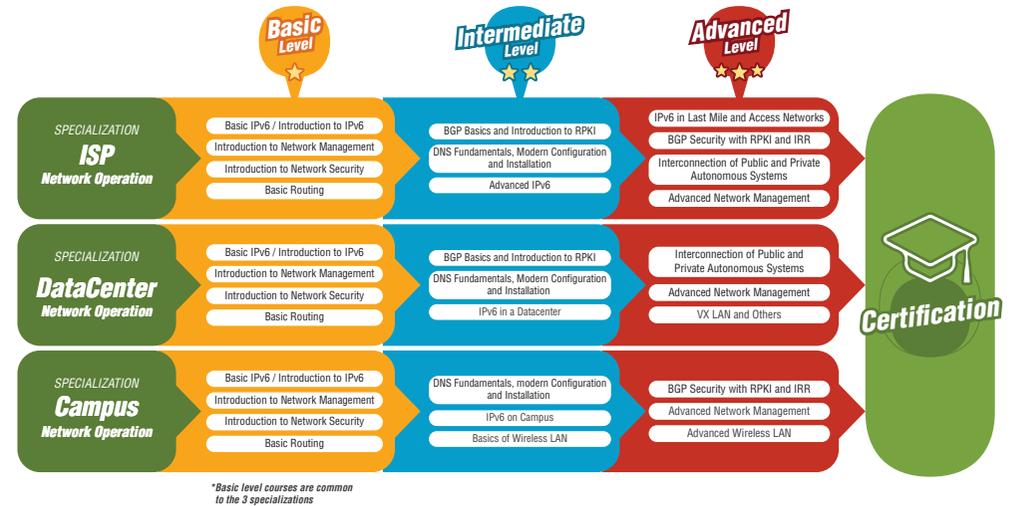
We welcomed **8,076 students**, and **49% of these students successfully completed their training**. **More than 35% opted for training in IPv6**.

Evolution of the number of registered and students on the Campus



As part of the **specializations** program we launched in 2022, in 2023 we completed the courses corresponding to the first specialization: ISP Network Operation.

<https://campus.lacnic.net/especializaciones/>



We also implemented a badge recognition system for **students who complete the courses corresponding to each level of this specialization**. A total of 278 badges were awarded across the basic (180), intermediate (82), and advanced (16) levels.

LACNIC Community Code of Conduct

During 2023, we conducted a public consultation with the community and our members. This consultation concluded the feedback phase of the process for introducing **improvements to the LACNIC Community Code of Conduct** initiated in 2022. The structured consultation addressed the following topics:

- Proper use of the facilities,
- Preventive suspension of the person accused,
- Extension of the appeal for defendants,
- Expansion of the Ethics Committee.

The acceptance rate of these changes among the community and our members was 85%, with a total of 172 responses. With this update, we incorporated the first three elements into the text and then defined a process for appointing the two additional members of the Ethics Committee.

Likewise, we updated other elements of the Code and the complaint process based on the recommendations of international consulting firm LRN (Latam), which conducted the study in 2022:

- Adoption of a **sanction severity scale** (low, medium, and high severity), and clarification of the limits to confidentiality,
- Inclusion of **sexual harassment** under unacceptable behaviors,
- Generation of a **dissemination and awareness campaign** for greater adoption of the code.

The goal of these efforts is for the Code of Conduct to remain a relevant instrument to ensure that our participation spaces are inclusive, safe, and discrimination-free.

Ethics Committee



Adriana Ibarra

Member of the Fiscal
Commission



Esteban Lescano

Member of the
LACNIC Board



Florencia Bianchi

LACNIC Staff



Nathalia Sautchuk

Community



Oscar Robles

LACNIC CEO

Policy Development

LACNIC operates based on a participative model according to which the rules (policies) that govern Internet resource administration are developed by the regional community through a public, participative, and transparent process that is open to anyone with an interest in topics related to Internet numbers and built on consensus.

This year, we had a **new election process** to appoint a co-chair for the Policy Development Process (PDP). It was the first to be implemented under the provisions of policy LAC-2020-4: “PDP Chair Election,” a proposal drafted by a **Working Group** in 2022 and implemented in December of that year.

Three candidates were nominated: Marcela Orbiscay (AR), Salvador Bertenbreiter (PE), and Tomás Lynch (AR). As a result of this process, Marcela Orbiscay was elected and assumed her role as co-chair during the LACNIC 39 Public Policy Forum.

The table below shows the policy proposals submitted in 2023 and their current status:

2023 Policy Development Process Chairs



Marcela Orbiscay



Sergio Rojas

Proposal	Status
LAC-2023-7: Temporary Transfers	Under discussion
LAC-2023-6: Special exception for global critical infrastructure providers	Did not reach consensus
LAC-2023-5: Delete ROAs for Recovered Resources	Second consensus
LAC-2023-4: Managing Legacy Resources	Not accepted for discussion under the PDP
LAC-2023-3: Considerations for Declaring a Proposal Abandoned	Did not reach consensus
LAC-2023-2: Include IPv6 in the Text of Section 5 of the Policy Manual	Abandoned
LAC-2023-1: Clarify Definition of Consensus	Did not reach consensus
LAC-2022-3: Managing Recovered Resources that were originally part of the Reserve for Critical Infrastructure	Implemented
LAC-2022-2: Clarification: The lease of resources is not allowed under the policies in force	Did not reach consensus
LAC-2022-1: Unify Texts That Apply to Both IPv4 and IPv6	Implemented
LAC-2020-6: Miscellaneous Modifications to the PDP	Ratified
LAC-2020-3: Impact Analysis Is Mandatory	Did not reach consensus
LAC-2020-10: Authorize Recipients of Delegated Blocks to sign ROAs	Implemented

Technical Forums

Technical Forums are spaces for sharing knowledge and experiences, and they contribute to further strengthen our region's technical Internet community.

LACNIC Technical Forum

<https://www.lacnic.net/2362/1/lacnic/foro-tecnico-de-lacnic>

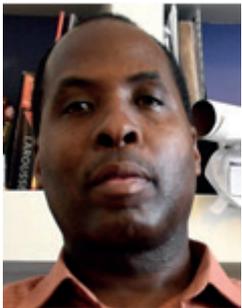
The LACNIC Technical Forum (LTF) is a space for the LAC community to share and discuss Internet technologies and implementations. It takes place yearly, in person, during the first LACNIC event.

This year, out of a total of 50 proposals they received, the program committee selected 15 presentations on topics such as IPv6, RPKI, IoT, BGP, and cybersecurity.

<https://lacnic39.lacnic.net/es/programa/agenda/foro-tecnico-de-lacnic>

The LFT **Program Committee** plays an essential role, as its members carefully select the work that is presented to the technical community at each event. Likewise, the Committee is supported by a group of **technical evaluators**, who are summoned depending on the technical topic to be evaluated.

This year, Uesley Correa, Pablo Cuello, and Jorge Villa served on this **Program Committee in representation of the regional community**.



Jorge Villa



Pablo Cuello



Uesley Correa

FIRST Regional Symposium

(Global Forum of Incident Response and Security Teams)

The FIRST Regional Symposium was held within the framework of LACNIC 39 (<https://www.first.org/events/symposium/fortaleza2023/>). This event was co-organized with FIRST and co-hosted by CERT.br.

This time, the Symposium included **two training sessions**, one on Containers Risks, Vulnerabilities, and Security, the other a simulation of a ransomware attack.

CSIRT Meeting

The LAC-CSIRT community was also part of the LACNOG 39 program. This meeting has become a workspace for Latin American and Caribbean actors to share security-related issues. This exchange of knowledge among participants seeks to strengthen the region's ability to prevent cybersecurity incidents and mitigate their impact.

During the meeting, attendees agreed on the importance of sharing information on security incidents in an automated and systematic manner. This is essential when collaborating with the target communities of various CSIRTs for incident management and the implementation of proactive measures.

One of the biggest challenges highlighted by participants was the demand for more professionals trained in incident management, as well as the need for retention policies to sustain these capabilities.

LACNOG

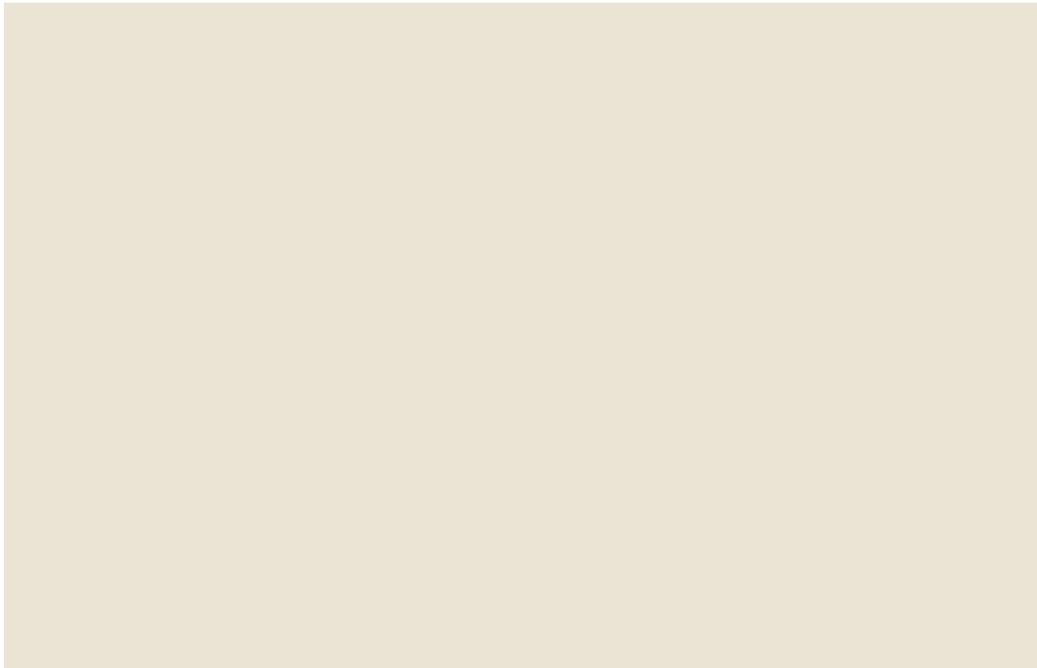
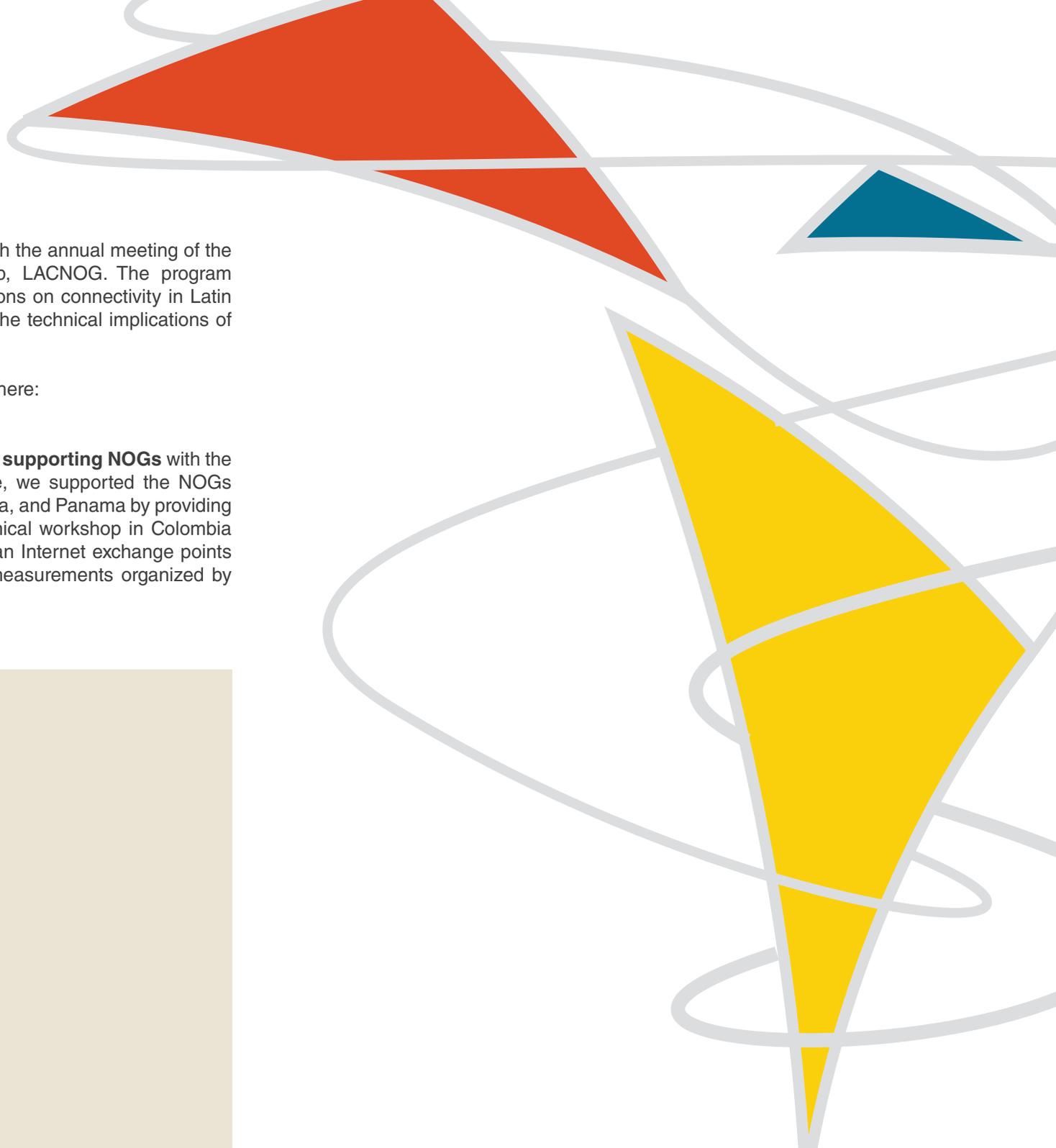
(Latin American and Caribbean Network Operators Group)

As usual, LACNIC's second annual event was held jointly with the annual meeting of the Latin American and Caribbean Network Operators Group, LACNOG. The program included 14 technical presentations, two keynote presentations on connectivity in Latin America and the history of BGP incidents, and a panel on the technical implications of website blocks.

All the presentations shared at LACNOG 2023 are available here:

<https://lacnic40.lacnic.net/es/programa/agenda/lacnog>

In addition, in 2023 we continued to work on the **program for supporting NOGs** with the collaboration of LACNOG and ISOC. Through this initiative, we supported the NOGs (national Network Operators' Groups) of Guatemala, Colombia, and Panama by providing them with some services. Likewise, we organized the technical workshop in Colombia aimed at local network operators and members of Colombian Internet exchange points (IXP). Finally, we also supported the webinar on Internet measurements organized by NOG Panama.



An Open, Stable, and Secure Internet



Strengthening Internet Infrastructure

1 - LACNIC Assigns Number Resources to the USC/ISI DNS Root Server

In early 2023, we signed a collaboration agreement with the University of Southern California's Information Sciences Institute (USC/ISI), operator of the DNS B-Root server. There are few instances of this root server in Latin America and the Caribbean, and this agreement allows us to deploy B-Root copies in our region.

Until now, ten of the thirteen root servers use North American region IP addresses (ARIN), two use European region IP addresses (RIPE NCC), and one uses Asia Pacific region IP addresses (APNIC). This concentration of infrastructure within a single registry was identified as a risk several years ago.

The purpose of the agreement was to renumber USC/ISI's root server into LACNIC's numbering space to increase the resilience of the Root Server System (RSS) by further diversifying the number of Regional Internet Registries (RIR) that have allocated IP addresses to Root Server Operators. With this change, b.root-servers.net's addresses moved from ARIN to Latin America and the Caribbean region (LACNIC) IP address space.

The announcement of this agreement is available here:
<https://www.lacnic.net/6868/1/lacnic/>

2 - Deployment of Services by IXPs

As part of a collaboration agreement between LAC-IX, the Internet Society, and LACNIC, we implemented a program for strengthening regional IXPs. The goal was to improve the IXPs' infrastructure, the quality of the services they provide to their members, and the quality of the Internet in each country.

The services we promote for their installation by IXPs include RPKI validators to enhance routing security and stability, anycast DNS servers, and the analysis of routing behavior using BGP collectors.

This year, we supported PIT Bolivia and STIX in the Dominican Republic. In both cases we collaborated with the installation of an authoritative DNS server and DNSSEC for the IXPs' domains and reverse zones.

During 2023 we supported the creation of a **study and analysis of the application of best practices in IXPs**, conducted by LAC-IX. The goal of the study is to develop an operational plan to ensure that IXPs adhere to best practices.

We also continued to support the gathering of information and **the updating of the interactive map of IXPs** (<https://lac-ix.org/ixps/>) hosted at LAC-IX. This map serves as the most current reference for IXPs in the region. This year, we introduced an API for querying this data through software, which makes it easier for researchers to consume the data.

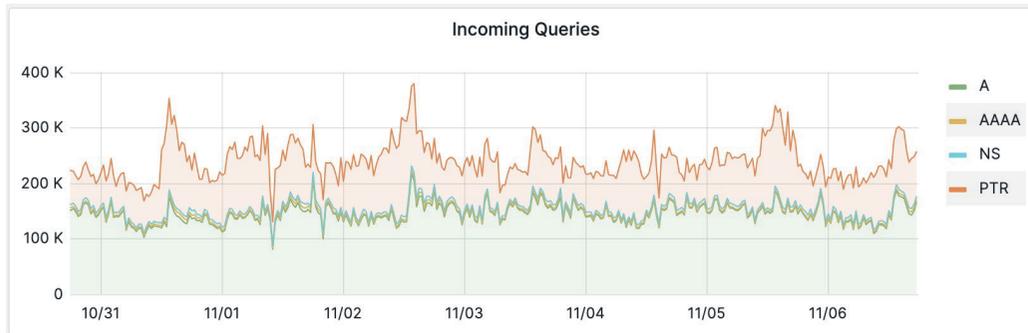
3 - Deployment of Anycast Services in LACNIC's Reverse Zones

LACNIC operates a secondary server for the in-addr.arpa and ip6.arpa zones which has been assigned the letter "D". The remaining secondary servers are operated by the other four RIRs and one by the IANA.

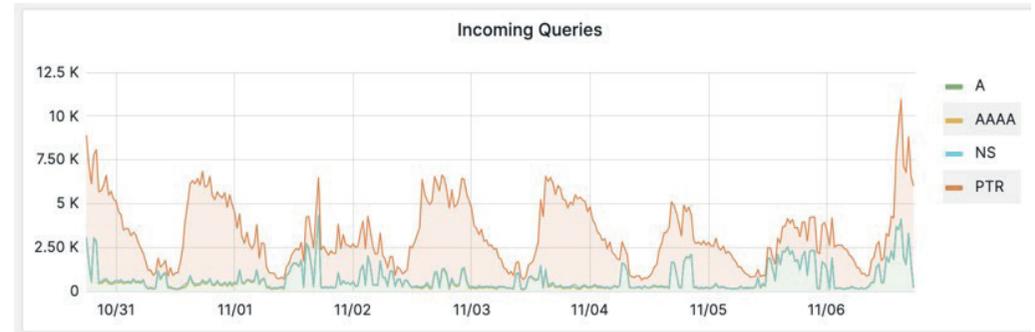
We've been running a program for the **installation of anycast copies** of this server since 2019. In 2022, we installed anycast copies in Santiago and at EdgeUno's datacenter in Lima. We are currently deploying copies in EdgeUno datacenters in:

- Miami, USA
- Guadalajara y Querétaro, México
- Buenos Aires, Argentina
- San José, Costa Rica
- San Pablo, Brasil

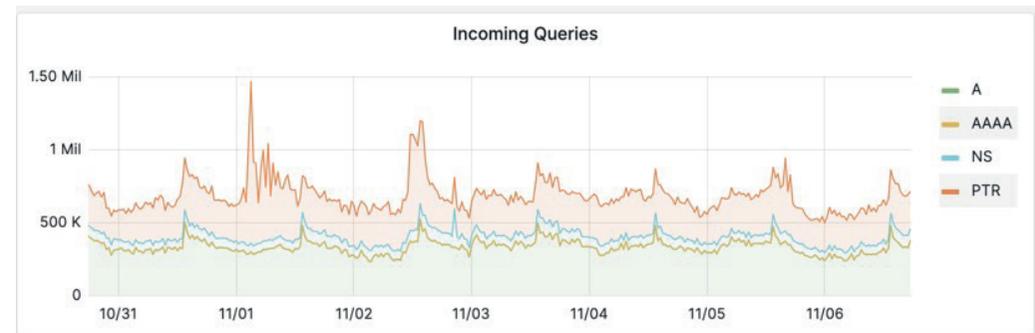
DNS queries received over a 7-day period by LACNIC's anycast instance in Miami



TDNS queries received over a 7-day period by LACNIC's anycast instance in Lima



DNS queries received over a 7-day period by LACNIC's anycast instance in Mexico

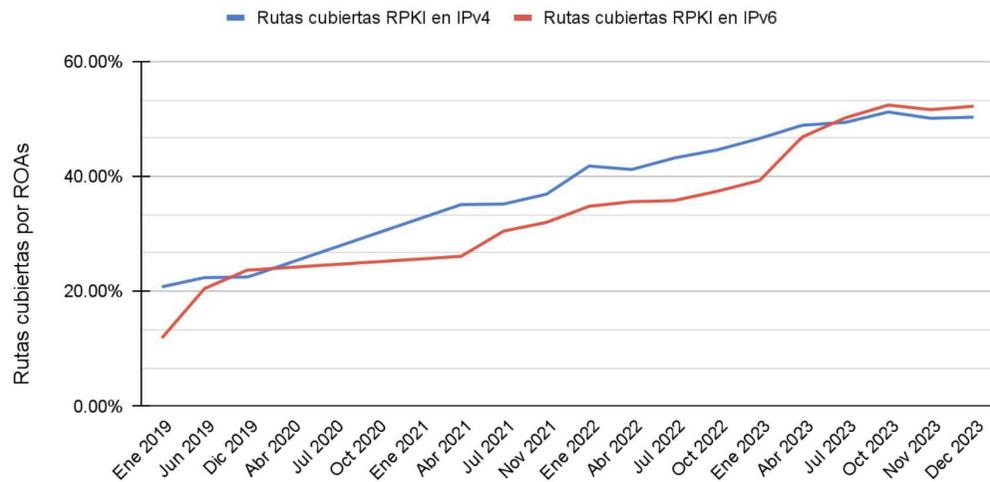


4 - Evolution of LACNIC's Internet Routing Registry and RPKI service

Our members' utilization of the Internet Routing Registry (IRR) and Resource Public Key Infrastructure (RPKI) services continues to grow, accompanied by increased adoption by content providers and carriers of IRR-based security checks and RPKI as a requirement for establishing peering or transit relationships.

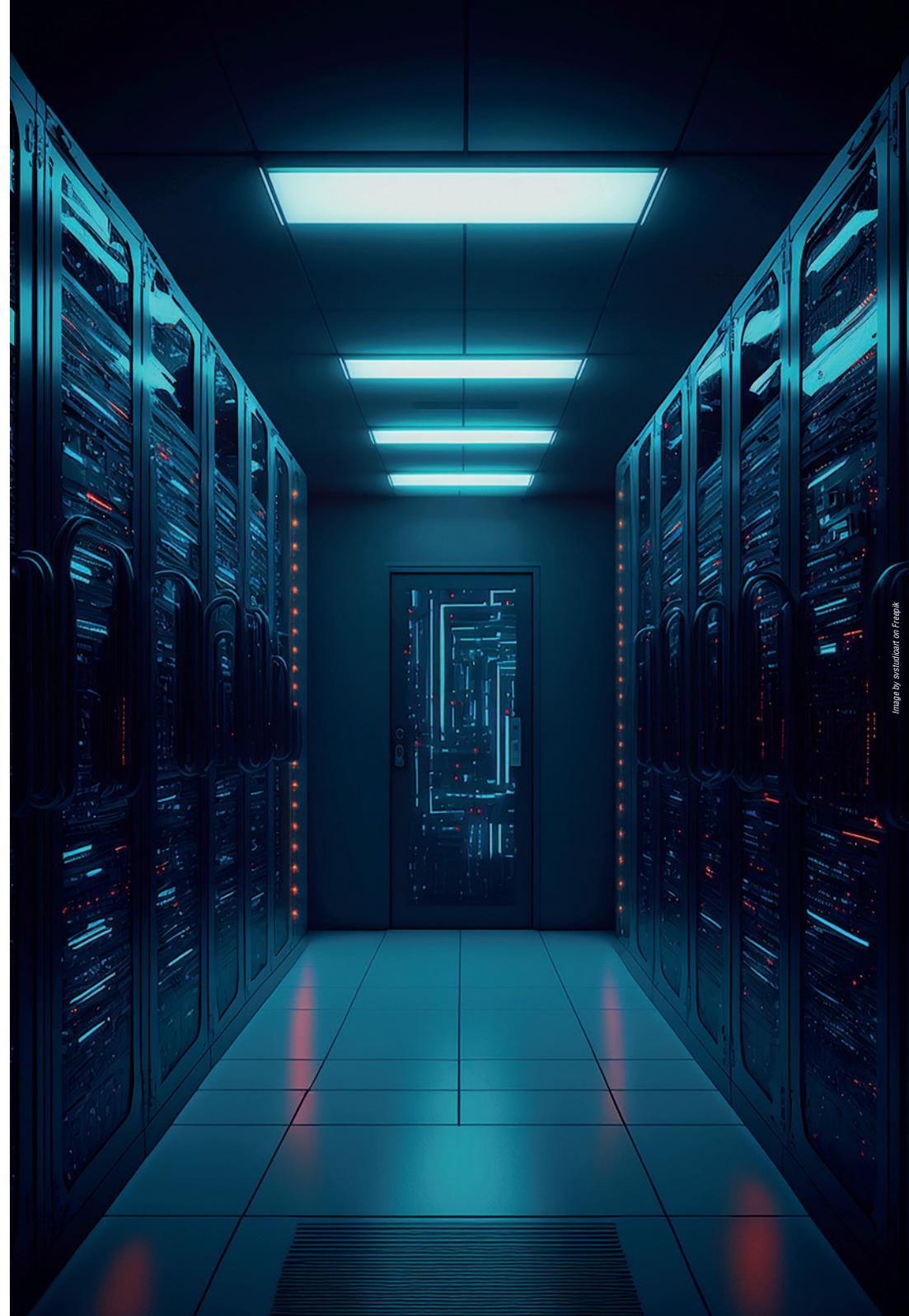
The graph below shows the evolution of the percentage of routes announced by our region that are covered by RPKI ROAs. In our region, **51.2% of IPv4 and 52.4% of IPv6 routes are covered by ROAs.**

Routes covered by RPKI (IPv4 and IPv6)



To support the increasing use of these tools, during our events we organize the following tutorials:

1. Use of RPKI and IRR for Network Operation
2. Secure Routing and Automation Lab
3. BGP Routing Security - Delegated RPKI / Krill



Contributing to Cybersecurity and Internet Resilience

1 - Honeypots: Growth of the Sensor Network in the Region

<https://blog.lacnic.net/ciberseguridad/red-de-sensores-para-detectar-amenazas>

This year, our CSIRT managed more than 152 security incidents involving Internet resources managed by LACNIC.

We continued to improve our sensor network by incorporating seven new honeypots to the CSIRT HoneyNet network, which reached a total of 29 sensors, six of them operating in dual-stack mode. The new sensors belong to organizations in Venezuela, Chile, Ecuador, and Peru.

2 - Panel on “The Future of Cybersecurity” at LACNIC 39

<https://blog.lacnic.net/ciberseguridad/explorando-el-futuro-de-la-ciberseguridad>

The LACNIC 39 program included a panel on cybersecurity, which discussed topics such as the current state of cyber hygiene, global trends in cybercrime and cyber incidents, and our most powerful defenses against the imminent risks that lurk in cyberspace.

The panel was comprised of **Pablo Álvarez**, Government of Yucatán SIIES; Sabas Casas, ACCENTURE Mexico; **Wilberth Pérez**, Rector of CSIRT-UADY, Autonomous University of Yucatán; **John Brown**, Team Cymru Senior Security Evangelist; **Claudio Peguero**, Advisor on Cyber Affairs for the Dominican Ministry of Foreign Relations, and Kevon Swift, Head of Public Safety Affairs at LACNIC.



The experts highlighted three lessons: 1) **raising awareness across multiple organizational levels** and even at residential level to cultivate a culture of cybersecurity; 2) **multistakeholder cooperation** requires collaboration across multiple fronts, including the creation and promotion of communities of trust between the technical experts responsible for security operations and law enforcement agencies; and 3) **promoting measures to build trust in the cyber domain across all nations**, using cyber diplomacy to enhance cross-border cooperation and the predictability of state apparatuses when an attack occurs.

Promoting IPv6 Deployment

3 - Cybersecurity Workshops and Meetings

Throughout the year we participated in various meetings and workshops focusing on cybersecurity. Highlights included:

1. The 8th Meeting of the Americas Working Group on Cybercrime for Heads of Units and Prosecutors, organized by Interpol. During this meeting, we addressed governance issues considered key by Regional Internet Registries (RIR), underscored the importance of WHOIS in cyber investigations, and gave a presentation on the work of LACNIC CSIRT and how it strengthens the regional CSIRT community and law enforcement efforts.

2. We co-organized the Workshop on Illegal Content in Santiago, Chile, for Latin American and Caribbean judges, prosecutors, and law enforcement agencies, together with LACTLD, NIC Chile, ICANN, NIC.br, Public Interest Registry, and the Internet Society. During the workshop, we worked on the functioning of the Internet, the Domain Name System (DNS), the organizations that are part of the Internet ecosystem, and the various mechanisms available to contact the persons responsible for online content.

4 - Regional Information Security Event (RISE)

The Team Cymru Regional Information Security Event (RISE) for Latin America and the Caribbean was held during LACNIC 39. This exclusive conference focused on threat intelligence and various other cybersecurity topics, with emphasis on classified case studies with TLP Amber and Red, as well as hands-on workshops.

1 - IPv6 Capacity Building

Within the framework of the LACNIC 39 and LACNIC 40 events, we organized two tutorials on the IPv6 protocol: [IPv6](#) and [Moving into the Future: Building an IPv6-Only Network](#).

In addition, we participated in the following activities related to IPv6 deployment to continue reaching out to regional operators who may still not know how to deploy the IPv6 protocol in their networks:

- Workshop on IPv6 and Mikrotik at AndinaLink
- IPv6 tutorial at Yucatán Internet Week

Likewise, the **LACNIC Campus** continued to add different courses on IPv6 with the option of remote participation. In 2023, more than 35% of the students who received training through the Campus opted for IPv6. <https://campus.lacnic.net/cursos/>

Webinars are another way to stay updated on the latest technical developments. In 2023, we held at least three webinars open to the community, focusing on various specific IPv6 topics. <https://www.lacnic.net/7044/1/lacnic/>

2 - IPv6 Only Website

In 2022, we decided to offer specific tools and tutorials for IPv6-only networks, so we created this microsite. This page contains documents on IPv6-compatible equipment and tutorials on IPv6-only datacenters, IPv6-only DNS, and how to configure an IPv6-only Apache server, among other resources. <https://www.lacnic.net/6371/1/lacnic/ipv6-only>

In 2023, we added seven tutorials and technical guides. In addition, we published several posts on IPv6 only on the LACNIC Blog that redirect to that webpage. <https://blog.lacnic.net/tag/ipv6>

Contributing to Internet Measurements

1 - RIPE Atlas Deployathons and Measurement Probes

Many of the research activities conducted in the region are based on active measurements obtained through the use of probes such as those that are part of the RIPE Atlas project (<https://atlas.ripe.net/about/>).

Because these probes have low coverage in most countries of Latin America and the Caribbean, we organized deployment activities in the form of “configuration hackathons” or deployathons, highlights of which included:

- Deployathon in Panama in collaboration with PANOG
- Deployathon in Costa Rica in collaboration with CRIX IXP
- Training webinar in Colombia, where we prepared the Raspberry Pi’s for a deployathon to be conducted at a later date

This year there are **100 new probes in 14 countries across the region.**



100 new probes
14 countries

2 - Report: Analysis of the Paths Followed by Traffic within Each Country of the LAC Region

<https://imasd.lacnic.net/es/interconexion/analisis-de-los-caminos-del-trafico-dentro-de-cada-pais-de-la-region-lac>

LACNIC conducted various types of Internet measurements at both the country and the regional level. One aspect that we are interested in measuring is the connectivity between networks operating in the countries of the region. To do so, we conducted studies based on latency times, information available from regional routing tables. In this new study, we sought to actively measure traffic behavior through the use of traceroutes.

These traceroutes are measured from different points of the network to IP addresses in each country, for a total of approximately 5,500 networks. We conducted several analyses based on this data, which are now available to operators in the region and to other researchers who wish to delve deeper into the topic.

Among other results, we were able to analyze which ASNs have the greatest centrality in each country, path lengths, whether interconnections occur internally or externally in each country, the presence of local IXPs, and more.

Software Developments to Support of LACNIC's Processes

2023 was a year of significant achievements for LACNIC in terms of software development. Despite ongoing challenges, our teams have demonstrated their ability to tackle multiple projects and maintain excellence in the software products they develop.

1 - Strengthening Our Infrastructure and Processes

We continued to strengthen our technological infrastructure and improve our software development processes. Examples of these improvements include:

- **Implementation of code review tools:** We implemented advanced static and dynamic code review tools, such as Wazuh and SonarQube, to improve the quality and security of our developments.
- **Technology upgrade:** We began migrating frameworks, web servers, libraries, and operating systems to more recent technologies and versions, always backed by rigorous quality and security tests.

These advances reinforce our ability to offer quality services and stay up to date with the latest trends in technology.

2 - Improvements to Existing Systems

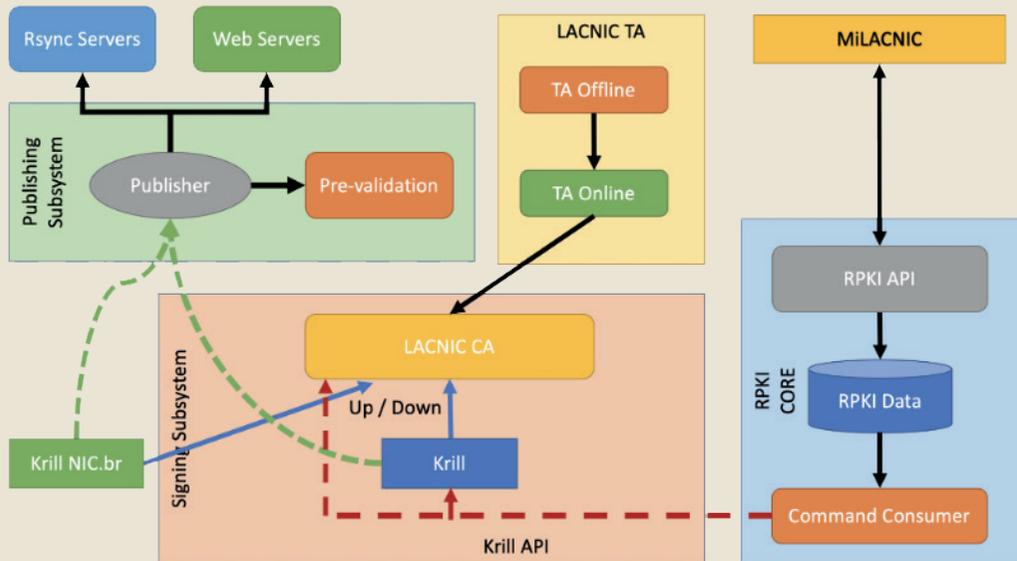
Improvements to our existing systems include the following achievements:

- **Inclusion of two-factor authentication in other systems:** After its implementation in Mi LACNIC, we continued to extend the use of 2FA to other systems.
- **Integration of our events system with Zoom:** We integrated our events system with Zoom to facilitate participation in hybrid events.
- **New version of our networking system:** We developed a new version of our networking system with improved messaging and communication mechanisms between event participants.
- **Integration of our events system with the LACNIC Campus:** We integrated the events system with the LACNIC Campus, improving participants' experience in this type of events.

3 - New RPKI Backend

The use of our RPKI service has increased substantially in the last couple of years, driven by the growing interest shown by various operators in this technology, and we identified the need to improve its foundation (core software, which implements the object signing and repository generation function).

During the last couple of years, we joined forces with NLnetLabs, a Dutch organization specializing in infrastructure software, to design and implement an architecture based on Krill, a robust and efficient platform that generates the cryptographic objects necessary for the operation of RPKI. This year, we will continue our collaboration to implement high availability support to ensure service continuity.



4 - New RPKI System Architecture

We successfully completed the necessary testing to guarantee a seamless transition into production. We also defined, tested, and prepared a plan for migrating from the previous system to the new one, thus achieving a more efficient and stable service for all our users without affecting their operations.



Sistema de Certificación de Recursos de LACNIC

The Internet and Its Social Impact

FRIDA Program

<https://programafrida.net/>

The FRIDA Program supports Latin American and Caribbean projects, initiatives, and solutions that contribute to the consolidation of a global, open, stable, and secure Internet.

In 2023, the total number of applications we received increased compared to 2022.



We also expanded the program's geographic reach, including a greater diversity of countries compared to 2022, and we supported the largest number of beneficiaries of the last three editions of the program, **introducing a line of non-financial technical support for the projects selected through the evaluation process.**

Of the total number of applications that were evaluated, **the selection committee selected ten projects from eight different countries, eight of which received support in the form of a grant, while the other two received an award.**

As for the **line of non-financial support, six organizations** were selected and will receive capacity building opportunities, invitations to specific webinars created within the framework of the FRIDA program, spaces for sharing cooperation and research opportunities, and advice for the identification of spaces and partners.

Check out the winning projects at:

<https://programafrida.net/proyectos/proyectos-seleccionados-2023>



Estabilidad y Seguridad de Internet

Diseño e Implementación de framework para la mitigación de ataques DDoS en el plano de datos de redes definidas por software mediante IA y P4

Instituto Tecnológico y de Estudios Superiores de Monterrey

SUBVENCIÓN MÉXICO ACADÉMICO

Midiendo el DNS en América Latina y el Caribe: hacia el desarrollo de indicadores regionales

Latin American and Caribbean Top-Level Domains (LACTLD)

SUBVENCIÓN URUGUAY SOCIEDAD CIVIL

Data Quality Assessment for Machine Learning in Network Security

Federal University of Rio Grande do Sul (UFRGS)

SUBVENCIÓN BRASIL ACADÉMICO

Red Colombiana de Blockchain: Desarrollo de Habilidades desde un Laboratorio para Aplicaciones Sociales y la Apropiación de la Tecnología Blockchain en Colombia

RENATA Red Académica Nacional de Tecnología Avanzada de Colombia

SUBVENCIÓN COLOMBIA ACADÉMICO



Conectividad y Acceso a Internet

Open Source Virtual Broadband Network (vBNG) Gateway as a Software Application for Open Networking in the Cloud (SONIC) for ISPs

SONIC-FABRIC

SUBVENCIÓN BRASIL PRIVADO

Creando capacidades para mujeres y niñas en la Chitara Cerritana: Somos Guardianas

Asociación Municipal de Mujeres

SUBVENCIÓN COLOMBIA SOCIEDAD CIVIL

Proyecto Yafun

NIC Chile

PREMIO CHILE ACADÉMICO



Internet Abierta y Libre

Asistencia a lideresas Mayas de los Centros Comunitarios Digitales

New Sun Road Guatemala, S.A.

SUBVENCIÓN GUATEMALA SOCIEDAD CIVIL

Laboratorio ciudadano por la Equidad de géneros en las TIC

Unión de Informáticos de Cuba (UIC)

SUBVENCIÓN CUBA SOCIEDAD CIVIL

Derecho a un ambiente sano, a la inclusión sociolaboral y a la inclusión digital

Planta de Gestión de Residuos Informáticos / Nodo TAU

PREMIO ARGENTINA SOCIEDAD CIVIL

Effective Collaboration for Applied Research

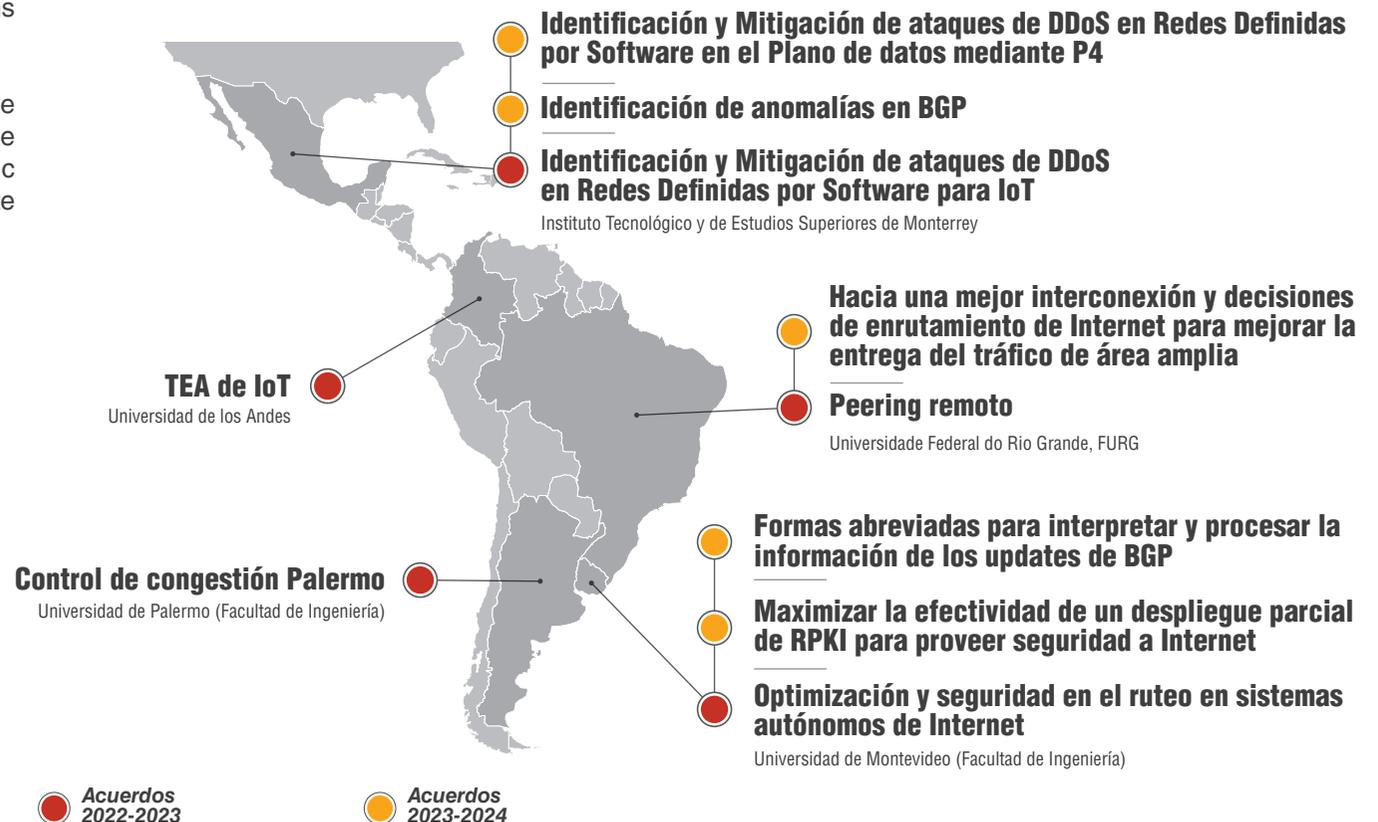
<https://www.lacnic.net/6754/1/lacnic/investigacion-aplicada>

In 2023 and within the framework of the five collaboration agreements we signed with various academic institutions, LACNIC provided guidance for the activities included in each study through 31 technical exchanges. We supported the identification of potential partners for testing and validation activities, as well as the identification and access to databases to improve research results.

We generated a space for presentations at the LACNIC 39 Technical Forum and facilitated five additional collaborations between academia, industry, and the private sector.

Thematic Axes. Through these collaboration agreements, we seek to promote and conduct research, case studies, the adoption of best practices, and other activities that have specific applications, involve solutions to real problems, and/or generate innovation in the following areas:

- Network architecture and operation
- Interconnection and traffic engineering
- Cryptography, security, and resilience
- Future Internet development



IT Women

We organized the fourth edition of the [Mentoring Program for Women in Technology](#), which seeks to promote the participation and leadership of women in the LACNIC community and the Internet ecosystem.

This initiative is supported by experts from the technical and academic community, who offer guidance and advise the participants throughout the duration of their work.

Candidata	Trabajo técnico	Mentor
Tauane de Jesus Casais Brasil	<i>Optimización de redes metropolitanas: supervisión activa con PerfSONAR y enfoque de calidad de servicio</i>	<i>Marcela Orbiscay (IANIGLA - CONICET)</i>
Marcia Montealegre Bolivia	<i>Panorama de costos operativos de los bloqueos de contenido</i>	<i>Lía Solís (LACNOG)</i>
Bianca Barbieri Brasil	<i>Uso de MPLS e ingeniería de tráfico para optimizar la red troncal</i>	<i>Rogério Mariano (Azion)</i>
Rachel Gabriela Vázquez Panamá	<i>Investigación y propuesta de caso de uso de Blockchain para Comunidades Indígenas Emberá de Panamá</i>	<i>Ilan Meléndez (LACNET)</i>
Raquel Marques Brasil	<i>Identificación de pautas para la propagación del fraude a través de las redes sociales</i>	<i>Nathalia Sautchuk (Karlsruhe University of Applied Sciences)</i>

In this edition, participants will be able to access training on project formulation and management, design thinking, leadership, and the ability to influence, as well as on high-impact public speaking. They will also have access to all the courses available on the **LACNIC Campus**.

Journalists and the Media

As part of our ongoing awareness-building efforts, on 30 May we organized a webinar for journalists. This virtual meeting was held together with the Inter-American Press Association (IAPA) and gave us the opportunity to explain the basic technical concepts behind the Internet and its operation. The activity attracted more than **130 journalists from the region**, who actively participated in the meeting.



Support for Internet Governance Spaces

LACNIC supports the strengthening of regional Internet governance discussion spaces, including LACIGF and national Internet governance initiatives. By generating and actively engaging in these spaces, we contribute to the discussions, promoting a better understanding of the multistakeholder model and the role played by LACNIC.

Participation in Governance Spaces

CaribNOG

The event was co-located with the CTU Caribbean ICT Week in Granada. Together with ARIN, we participated in a presentation on the **status of IPv6** in the region.

CITEL/OAS



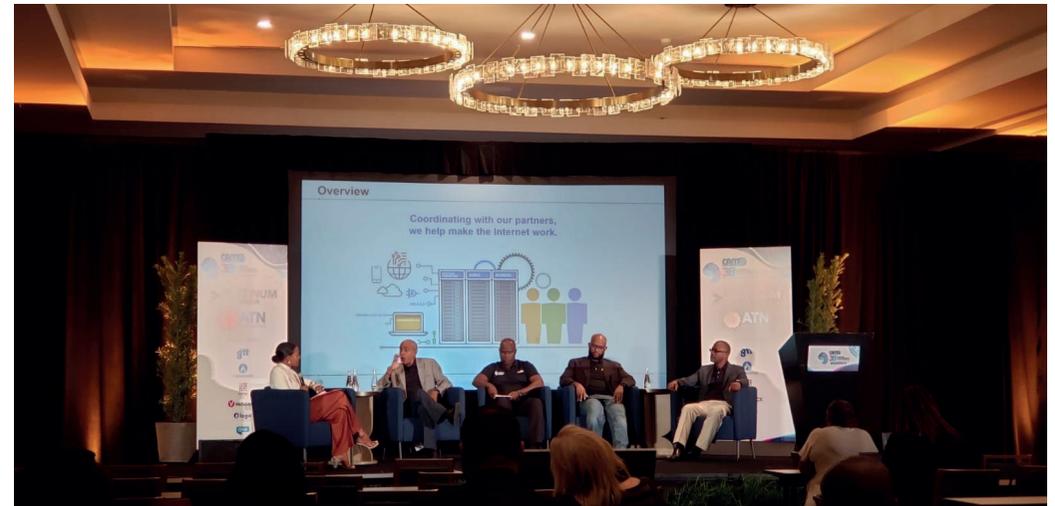
We continued with the rapporteurship on interoperability, infrastructure, connectivity, numbering, services, and applications, including Internet and international connectivity, at CCPI.

CICTE/OAS

We continued to further our relationship with the organization with the intention of collaborating on joint activities in the region. During our meeting with Caribbean Governments in Trinidad and Tobago, we had the opportunity to meet with the OAS to discuss cybersecurity and other topics.

39th CANTO Conference and Annual Exhibition

We attended the annual CANTO meeting in Miami, where we set up a booth together with ARIN and the Internet Society. We participated on the panel discussion titled “**Collaborating to Build Regional Success**”, which attracted over 600 attendees from more than 30 countries.



COMTELCA

We gave a presentation for members of the organization on device families and numbering systems, focusing on the **need to adopt IPv6**.



ECLAC / eLAC

This year we worked actively on developing our institutional relations with ECLAC and our impact on the eLAC process.

In addition to jointly organizing the Latin American School on Digital Transformation and Innovation in São Paulo, Brazil, we invited the Working Groups on Meaningful Connectivity and Digital Economy to a meeting at Casa de Internet for Latin America and the Caribbean.

We also held a meeting with Caribbean ICT Ministries together with ARIN and ICANN.

IIDH

We worked together with the Inter-American Institute of Human Rights and contributed two classes to their course on Privacy: How the Internet Works and Privacy in the DNS.

Participation and Contribution to the Global IGF and LACIGF

Throughout 2023, we participated in various instances of the Internet Governance Forum (IGF), both at the global and the national level.



The 16th edition of **LACIGF** (<https://lacigf.org/lacigf-16/>) was held in Bogotá, Colombia, on 4 and 5 December, and LACNIC supported both the Program Committee and the event's logistics.

We participated in the organization of the sessions on [Inclusion and the Digital Divide, Cybersecurity, and Online Safety](#) and [Avoiding Internet Fragmentation](#).

Additionally, during 2023 the LACIGF Program Committee implemented the process for the selection of a new secretariat for 2023, which resulted in the appointment of **COLNODO** with automatic renewal up to and including 2025.

In the Caribbean, we were present at the **Caribbean IGF** which took place together with the Youth Caribbean IGF from 22 to 24 August. We participated in the opening, Fair Share, and Introduction to Internet Governance sessions, and organized the Cybersecurity and Cybercrime session. We also gave a presentation on our Líderes program.

This year, we supported various **national IGFs** by providing services that allowed their organization. In 2023, we supported the following initiatives:

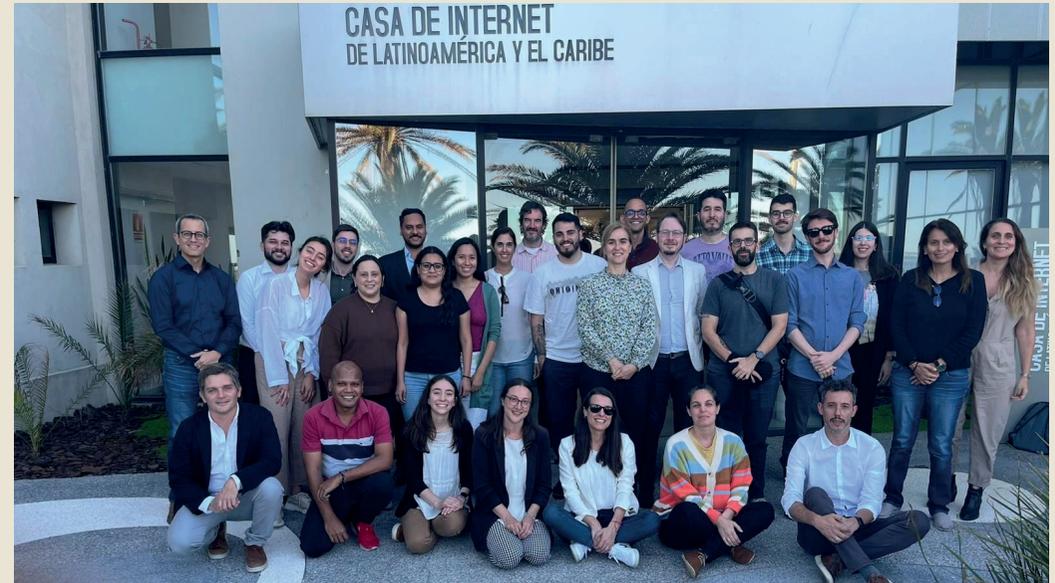
- TT IGF
- IGF Panamá
- IGF Haití
- Youth LAC IGF
- IGF Uruguay
- IGF Perú
- IGF Bolivia

Finally, together with LACTLD and the University of San Andres Center for the Study of Technology and Society (CETyS), we organized the fourth edition of the **IGF LAC Space** within the framework of the global IGF in Japan. This session offers an opportunity to showcase the projects developed each year by organizations in the region along with plans for the upcoming year and promotes synergies among participants.

After their participation in the Líderes program, two researchers had the chance to present the work they completed at this space.



Capacity Building



This year we participated in the **South School on Internet Governance (SSIG 2023)**, which attracted the participation of 400 students.

We also supported the **Diploma in Internet Governance (DIGI 2023)**, an initiative of the Catholic University of Uruguay and the University of San Andres Center for the Study of Technology and Society (CETyS).

We sponsored ten individuals who participated in our **Policy Shapers** program, thus contributing to their career development.

As part of the Advisory Committee, we worked on the contents of the Diploma. We also extended an invitation to the organizers to schedule one day of the program's activities at Casa de Internet for LAC.

Finally, we gave a presentation about LACNIC and the role of the RIRs at the **Virtual School of Internet Governance**.

Líderes and Policy Shapers Programs

The Líderes Program

<https://www.lacnic.net/lideres>

The goal of the Líderes program is to provide funding and mentoring to professionals in the region selected to conduct research on topics related to Internet governance (IG), considering the perspective of their own communities.

The program received 76 applications from different countries across the region, of which 12 researchers were selected.

The projects selected in 2023 are available here: <https://www.lacnic.net/6972/1/lacnic/>

Policy Shapers Program

<https://www.lacnic.net/6876/1/lacnic/>

The Policy Shapers program seeks to attract actors from various sectors to our community and accompany their insertion into the world of Internet Governance.

Five candidates were selected to attend the LACNIC 39 event in Mérida, Mexico. These candidates had previously completed the Líderes program and the Introduction to Internet Governance in LAC course on the LACNIC Campus.



They also received sponsorships to participate in the IIDH Personal Data Protection course, the Diploma in Internet Governance by the Catholic University of Uruguay (UCU) and the San Andrés University Center for the Study of Technology and Society (CETyS). In addition, we encouraged and followed-up with them so they could participate in various Internet governance spaces and meetings.



A group of Policy Shapers participate in a meeting prior to LACIGF in Bogotá, December 2023

Relationships with Governments and Decision-Makers

Throughout 2023, we focused on three thematic axes related to the free, open, and secure development of the Internet: **cybersecurity, website blocking, and Internet resilience**.

We met with 13 officials from various countries and territories at events such as CANTO, the CTU ICT Week, the ECLAC School of Digital Transformation and Innovation, the CITEL meeting, and the Illegal Content Workshop. These meetings provided us with the opportunity to introduce ourselves and share key messaging with the authorities.



We engaged with officials from Costa Rica, Curaçao, Ecuador, Guatemala, Honduras, Panama, Paraguay, Peru, the Dominican Republic, Trinidad and Tobago, and Uruguay.

Highlights of these meetings include our participation in the **ECLAC and CETIC.br School of Digital Transformation and Innovation** along with other organizations that are part of the technical community. This initiative was conceived as a capacity-building program for policymakers within the framework of the intersectoral debate on the challenges of digital transformation.



Together with the CTU, ARIN, and ICANN, we organized a **meeting with Caribbean Technology Ministers in Trinidad & Tobago**. During this meeting, we gave a presentation on cybersecurity, website blocking, and resilience in the Caribbean.



Finally, we invited the participants of the **Regulatel meeting in Montevideo** (technical officers with regulators in the region) to Casa de Internet for LAC, where we spoke about how the Internet works, the risks of website blocks, and other topics relevant for the healthy development of the Internet.



Annexes



Annexes

- External Auditor Report
- LACNIC's Fiscal Commission Report



www.lacnic.net