

2021

ARIN

American Registry for Internet Numbers

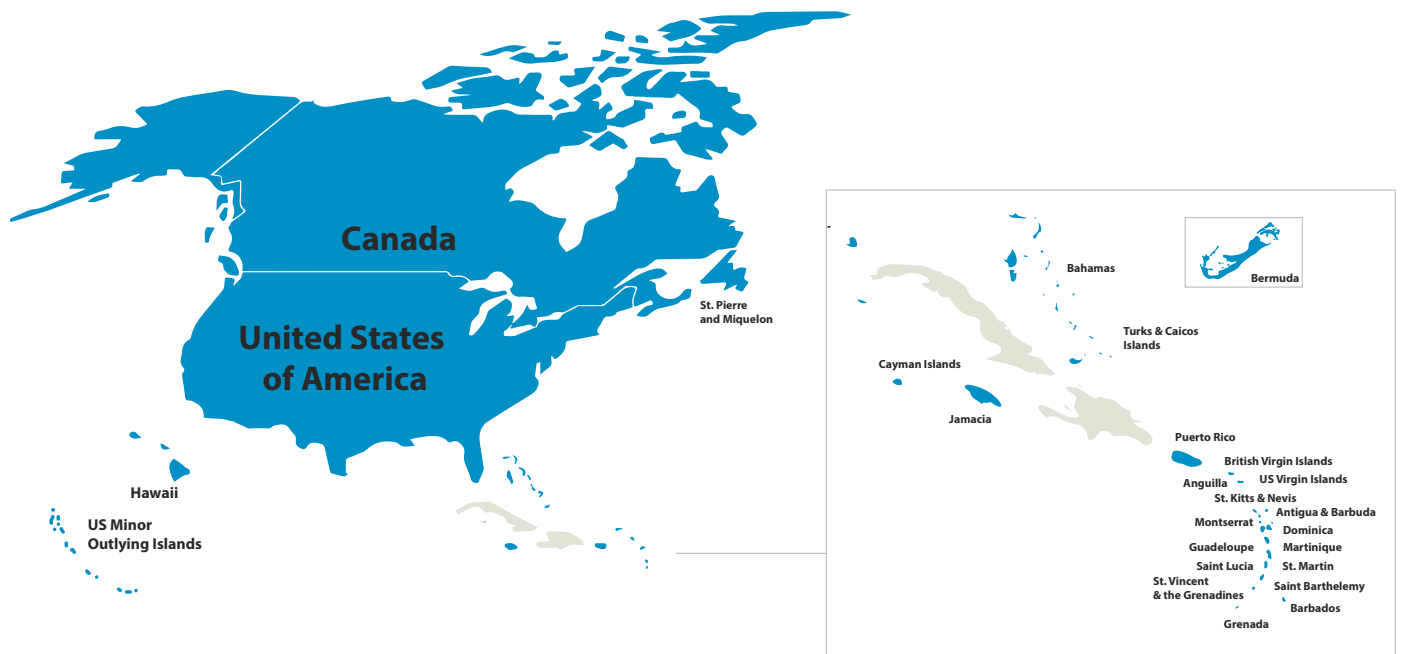
ANNUAL
REPORT

The American Registry for Internet Numbers, a nonprofit member-based organization, supports the operation of the Internet through the management of Internet number resources throughout its service region; coordinates the development of policies by the community for the management of Internet Protocol number resources; and advances the Internet through informational outreach.

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THE ARIN REGION



ARIN serves the following economies: Anguilla, Antarctica, Antigua and Barbuda, Bahamas, Barbados, Bermuda, Bouvet Island, Canada, Cayman Islands, Dominica, Grenada, Guadeloupe, Heard and McDonald Islands, Jamaica, Martinique, Montserrat, Saint Barthelemy, Saint Kitts and Nevis, Saint Lucia, St. Pierre and Miquelon, Saint Vincent and the Grenadines, St. Martin, St. Helena, Turks and Caicos Islands, Virgin Islands (British), United States (including Puerto Rico, Virgin Islands (US), and Minor Outlying Islands).

ABOUT ARIN

The American Registry for Internet Numbers provides services related to the technical coordination and management of Internet number resources in accordance with its mission statement:

ARIN, a nonprofit member-based organization, supports the operation of the Internet through the management of Internet number resources throughout its service region; coordinates the development of policies by the community for the management of Internet Protocol number resources; and advances the Internet through informational outreach.

REGISTRATION SERVICES

ARIN's primary function is the registration of IP addresses and ASNs, collectively referred to as Internet number resources. These resources are delegated in a way to ensure global uniqueness. ARIN also operates directory services which allow the public to determine to whom those number resources are registered. This work includes:

- The allocation, assignment, and transfer of all Internet number resources
- Help desk operations over phone and via ARIN Online
- Reverse delegation registration maintenance of ARIN's Whois service, the WhoWas historical registration database, and an Internet Routing Registry service within the ARIN region

TECHNICAL SERVICES

ARIN develops, implements, and supports both internal systems and community services like:

- Customer web portal (ARIN Online)
- Security services such as Cryptographic Authentication, DNS Security (DNSSEC), and Resource Public Key Infrastructure (RPKI)
- RESTful Provisioning (Reg-RWS)
- Whois and Registration Data Access Protocol (RDAP) directory services
- Operational Test & Evaluation (OT&E) Environment

ORGANIZATION SERVICES

ARIN coordinates meaningful interaction between members, stakeholders, and the organization, including:

- Facilitation of the Policy Development Process (PDP) to include Public Policy and Members Meetings, maintaining email lists, and publishing documents such as the Number Resource Policy Manual (NRPM)
- Education through web content, outreach, and training
- Annual elections for the ARIN Board of Trustees, ARIN Advisory Council, and Number Resource Organization Number Council
- Community engagement via the ARIN Consultation and Suggestion Process (ACSP), website feedback button, and periodic customer satisfaction surveys

FROM THE PRESIDENT

As we wrap up another unprecedented year, we are successfully continuing to operate in service of the ARIN community and Internet as a whole. While 2021 didn't turn out to be the year many of us expected, we are proud to say that we grew as an organization, refined our services, and delivered on our key promises.

This annual report will give you insight into how much we were able to accomplish, despite the ongoing global COVID-19 pandemic. Throughout our pandemic operations, we have continued to focus on protecting the health and safety of our community, staff, and volunteers. We follow the recommendations set out by national and local health authorities to guide our decision making. For much of the year, we took to online-only engagements, remote work, and only met in person on a limited basis and with precautions in place. Our spring Public Policy and Members Meeting in 2021 was entirely virtual and then in the fall, we hosted our first hybrid Public Policy and Members Meeting in Minneapolis, Minnesota.

As always, we managed the allocation and transfer of IPv4, IPv6, and ASNs in the ARIN region in accordance with community-developed policies. In addition, we issued several consultations to the community on improving our governance and services, including consultations on the future of ARIN's Unauthenticated IRR, Password Security for ARIN Online Accounts, Fees, Retiring the Officer Attestation Requirement, Membership Structure, and Board of Trustees Term Limits. We also made security improvements for Whois-RWS, RDAP, and our website; we added RESTful API to our Internet Routing Registry (IRR) and added support for three TLS Version 1.3 Cipher Suites.

We enhanced the Organization Create and Organization Recovery Process in Registration Services to improve customer satisfaction. We introduced our Premier Support Plan service for our largest customers, which provides them with dedicated account representatives, and prioritized ticket processing. And we awarded three Community Grants to projects designed to advance ARIN's mission and benefit the Internet community in the region. We updated the ARIN website to include our popular blog content and a new service status page. We offered multiple new training webinars live and on-demand, onboarding webinars for new customers, and continued execution on many other ongoing programs and initiatives at the same high standard you have come to expect from us.

We remain committed to preserving the stability and security of the Internet Number Registry System to work to that goal within ARIN and in coordination with our colleagues around the world at our fellow Regional Internet Registries (RIRs).

I want to thank each of you who helped us achieve our organizational objectives through a difficult year, and I look forward a bright and hopeful 2022.

**JOHN
CURRAN**

President & CEO

KEY TAKEAWAYS

Hosted two successful
Public Policy and Members
Meetings

Revamped Membership
structure

Security improvements for
Whois-RWS, RDAP and
our site

Enhanced Organization
Create and Organization
Recovery processes

Introduced Premier
Support Plan

FROM THE CHAIRMAN

**BILL
SANDIFORD**

Chairman

KEY TAKEAWAYS

Governance Working Group Committee began releasing a slate of consultations

ARIN welcomes new Vice President of Information Security

Revamped the ARIN fee schedule

Retirement of longtime Board Chair Paul Andersen

Although 2021 presented similar challenges as 2020, I am pleased to say that the ARIN Board of Trustees continued to serve our community and improve the organization with the same quality of service you've come to expect from us.

Since the beginning of the year, the ARIN Board of Trustees spent time gearing up for some major changes. The Board's Governance Working Group Committee presented their workplan for some adjustments they think will make ARIN run just a bit better. We started a series of community consultations in late 2021 (that will continue into 2022) that will allow the community to have direct input on implementation of recommendations to improve ARIN governance.

In our increasingly Internet-dependent world, new challenges require new roles. As a result, the ARIN Board has directed increasing effort toward cybersecurity at ARIN, including bringing on additional staff to help improve our security posture.

The Board also adopted a new ARIN fee schedule, effective as of 1 January 2022, to ensure costs are distributed in an equitable manner by eliminating the fee differentiation between ISP and end user organizations. As part of removing this differentiation between ISPs and end user organizations, we have made it so all customers with valid ARIN Registration Services Agreements (RSA or LRSA) for IPv4 and/or IPv6 address space are automatically ARIN members and have the opportunity to participate in ARIN Elections if they request General membership and meet nominal voter eligibility requirements.

Perhaps one of the more significant Board changes to come out in 2021 was the retirement of former Board Chair Paul Andersen, who has served ARIN in a range of elected roles for well over a decade. Paul left a big pair of shoes to fill, but I am confident that we can continue the success that ARIN has accomplished thus far under his guidance. Thank you for all of your years of service, Paul!

And of course, thank you to ARIN's members, community, volunteers, and staff. Thank you for placing your trust in ARIN and its Board and thank you for your service and hard work during these challenging times.

As we look forward to 2022 and beyond, I am delighted to continue to serve ARIN and its community. We have some exciting projects planned, and I hope to see you around at an ARIN meeting — either on Zoom or in person — soon.

Sincerely,

Bill Sandiford
Board Chair

BOARD OF TRUSTEES

The Board establishes and maintains authority over ARIN’s scope, mission, and strategic and fiscal direction. The Board also oversees committee nominations, appointments, elections, and votes on community-developed draft policies in accordance with the Policy Development Process (PDP): <https://www.arin.net/participate/policy/pdp>.

In 2021, the Board of Trustees consisted of seven members and a Board Secretary. Six members were elected by ARIN’s membership, and the President and CEO of ARIN, John Curran, serves as the seventh member. The role of Board Secretary was fulfilled by ARIN’s General Counsel, Michael Abejuela. An additional voting member (potentially bringing the Board to eight voting seats) may be appointed by the Board at its discretion (for a term not to exceed one year) to provide diversity to the Board’s membership.

Each year, the Board holds approximately four in-person meetings and between five and 10 teleconferences. In 2021, due to COVID-19, the Board only met in-person twice — once in Boston and once during ARIN 48 in Minneapolis. The rest of the meetings were held via teleconference. View meeting minutes at <https://www.arin.net/about/welcome/board/meetings>.

2021 ELECTION RESULTS

In November 2021, Peter Harrison was re-elected and Bram Abramson was elected to the ARIN Board of Trustees. Each will serve a three-year term commencing 1 January 2022. Read ARIN’s election guidelines at <https://www.arin.net/participate/oversight/elections/processes>.

ARIN would also like to recognize outgoing Board Chair Paul Andersen. Paul served the ARIN Membership and community for many years on both the Board of Trustees, and ARIN sincerely thanks him for his dedication and service. In 2022, he was appointed the Past Chair title for the Board of Trustees.



2021 BOARD MEMBERS

Paul Andersen
Chair

Nancy Carter
Treasurer

John Curran
President & CEO

Peter Harrison

**Catherine
Middleton**

Tina Morris

Bill Sandiford
Vice Chair

BOARD ACTIONS

- Adopted ARIN Board Standing Rules
- Approves ARIN Consultation & Suggestion Process (ACSP) List
- Elected Officers:
 - Paul Andersen, Chair
 - Bill Sandiford, Vice Chair
 - Michael Abejuela, Secretary
 - Nancy Carter, Treasurer
- Accepted Compensation Committee Charter, Mailing List AUP Committee Charter, Finance Committee Charter, Nominations Committee Charter, Governance Working Group Charter
- Appointed Board members to Committees
 - Compensation: Paul Andersen (Chair), Nancy Carter, Tina Morris
 - Finance: Nancy Carter (Chair), Paul Andersen, Peter Harrison, Bill Sandiford
 - Governance Working Group: Nancy Carter (Chair), Peter Harrison, Catherine Middleton
 - Mailing List AUP: Tina Morris
 - Nominations: Catherine Middleton (Chair), Tina Morris
 - Election Officer/Vote Counter: Bill Sandiford
 - NRO EC Observer: Paul Andersen
- Authorized Treasurer to Approve Future Commitments
- Adopted Draft Policy ARIN 2020-2: Reinstatement of Organizations Removed from Waitlist by Implementation of ARIN-2019-16
- Adopted revised ARIN Investment Policy Statement
- Adopted the GWG 2021 Workplan
- Approves of ARIN Strategic Direction Statement
- Elected all net assets at December 31, 2020 as undesignated
- Accepted 2020 Auditor's Report and 2020 Audited Financial Statement
- Approved the 2021 Board Guidance Letter to the ARIN Nomination Committee, the 2021 ARIN Election Processes, the 2021 ARIN Election Processes Calendar, and the 2021 NRO NC Election Processes
- Accepted ARIN's 2020 IRS Form 990 and 990T to file with IRS
- Approved and adopted the ARIN Fee Schedule
- Adopted Draft Policy 2020-7: 4.4 gTLD Micro-Allocation Clarification
- Adopted Draft Policy 2020-8: Clarify and Updated 4.2.1.2 Annual Renewal Fee
- Adopted ARIN-edit-2020-11: Add Textual Description for the Number Resource Hierarchy Image in Section 2 of the Number Resource Policy Manual (NRPM)
- Approved funding of recommended grants
- Adopted ARIN-edit-2021-1: ASN Clarifications to Section 2 and 8

BOARD ACTIONS

- Approved ARIN 2022 Budget
- Approved revised Investment Policy Statement
- Approved proposed Bylaws changes for community consultation
- Adopted ARIN-edit-2020-9: Section 8 Editorial Clean-Up
- Appointed Paul Andersen to the Office of Past Chair for 2022
- Elected Bill Sandiford as Chair, Tina Morris as Vice Chair
- Approved composition of its 2021 Standing Committees for the remainder of 2021, and until the Standing Committees for 2022 are appointed, as follows:
 - Compensation Committee: Bill Sandiford (Chair); Nancy Carter (Treasurer); Tina Morris; with the remainder of elected Board welcome as non-voting participants in the activities of the Compensation Committee.
 - ARIN Finance Committee: Nancy Carter (Treasurer), Paul Andersen, Peter Harrison, Bill Sandiford
 - ARIN Board Governance Working Group: Nancy Carter (Chair), Peter Harrison, Catherine Middleton
 - AUP Committee: Tina Morris (Chair)
 - Election Officer and Vote Counter: Bill Sandiford
 - NRO EC Observer: Paul Andersen
- Confirmed results of the ARIN 2021 Election Process
- Adopted new membership structure by amending ARIN Bylaws with revised language
- Approved initiating community consultations on elections and communications and increasing the size of the ARIN Board
- Referred potential contribution to IETF Endowment to ARIN Finance Committee
- Appointed Bill Sandiford as ARIN's 2022 NRO EC Board Observer

FROM THE COO

RICHARD JIMMERSON

Chief Operating Officer

KEY TAKEAWAYS

In-person outreach events continued to be virtual

ARIN staff plans to transition to a hybrid work environment post-pandemic

Multiple service improvements completed in 2021

I am proud to report that ARIN completed a successful year of operations in 2021 with sustained high levels of productivity to deliver important Internet infrastructure services to you on behalf of the Internet community. Our scheduled project work and improvements to registry services were delivered in accordance with the goals and objectives set by ARIN's community-elected Board of Trustees.

Although our day-to-day operations continue to be unaffected by the global pandemic, most of our usual in-person outreach events continued to be delivered online in 2021. At the end of the year, we were able to deliver a hybrid Public Policy and Member's Meeting, with some meeting content only taking place online and other portions delivered both in person in Minneapolis and online.

Related to the pandemic and our remote operations, the ARIN organization contracted with an external human resources firm to study how we will conduct our work in the post-pandemic environment. Through that work and communications with ARIN staff, we established that ARIN will transition to a hybrid work environment in 2022. Many ARIN staff will split their work time between the ARIN offices and their telework environment in 2022. Other staff positions will transition back to working all days per week from the ARIN offices.

We completed many service improvements in 2021. Information about service and software updates this past year can be found at <https://www.arin.net/reference/materials/software>.

I would also like to highlight that we added a new senior level staff position at ARIN. Christian Johnson joined the ARIN team in the second half of 2021 as our Vice President of Information Security. His work will focus on strengthening ARIN's information security posture and formally certifying our security practices.

The ARIN team is passionate about our mission and providing excellent registry services to the Internet industry. Thank you for your support of the organization and the important work that we perform on your behalf. We are looking forward to another successful year in 2022.

FINAL ACTIONS COMPLETED IN 2021 ON SUGGESTIONS FROM OUR COMMUNITY

2021.24: Publish IP Ranges Allocated to Major Providers Within Each State or County

2020.13: Improve Reverse DNS Security

2020.16: Follow Rate Limiting (Throttling) Advice in NIST 800-63B Section 5.2.2 When Locking User Accounts

2018.22: Align ARIN password policy with current NIST SP800-63 recommendations

2021.7: Provide ROA API with Improved Display Options

2020.5: Service Availability Page

2015.15: Improvements to SSL Security for whois.arin.net

FROM THE CCO

The Office of the CCO, which oversees the Registration Services and Communication departments, continued to focus on the quality and delivery of ARIN services this past year by providing several critical internal functions.

This included championing data-driven analysis and performing regular and in-depth process and service reviews, all with a goal of improving internal operational processes to ensure the voice of the customer is both heard and included in all service improvement initiatives and prioritization.

Notably this past year, the CCO Office provided in-depth financial data analysis and modeling support for the 2022 ARIN Fee Schedule. This brought about significant membership changes allowing more of our customers the opportunity to participate in ARIN elections and governance. Concrete steps to enhance our security services posture within our organization and community were also taken in 2021.

Significant accomplishments this year include:

- Coordinated and implemented Fee Harmonization
- Identified and supported Member changes (Service Member and General Members)
- Worked with the Registration Services Department (RSD) to successfully support the launch of the Premier Support Plan (PSP) in April 2021
- Expanded our commitment to Routing Security with the addition of a Senior Product Owner, Routing Security, to ARIN staff
- Defined and deployed a soft rollout of Hybrid RPKI (full launch in Q1 2022)
- Defined and implemented an ARIN IRR/NONAUTH Object Migration Plan leading into 2022
- Managed the annual ARIN Election process while exceeding voter quorum
- Presided over the quarterly rights extinguishment process and subsequent IPv4 waitlist distributions
- Triaged and researched community fraud reports, providing robust analysis in partnership with both the internal ARIN legal team and external organizations as applicable

Organizationally, 2021 saw the addition of Brad Gorman, Senior Product Owner, Routing Security. This newly dedicated role focuses exclusively on routing security (ex. RPKI, IRR) and demonstrates our ongoing commitment to and support of the growing use of these services by the community.

The teams in the Office of the CCO are excited for what the future brings and will continue to focus on providing an exceptional customer experience by focusing on interactions with our members, customers, and the community when using ARIN services.

JOHN SWEETING
Chief Customer Officer

KEY TAKEAWAYS

Hosted two successful Public Policy and Members Meetings

Revamped Membership structure

Security improvements for Whois-RWS, RDAP and the ARIN website

Enhanced Organization Create and Organization Recovery processes

Introduced Premier Support Plan

FROM THE CFO

BRIAN KIRK

Chief Financial
Officer

KEY TAKEAWAYS

Investment consulting services transitioned to Fiducient Advisors; new investment allocation strategy created

Responsible for acting as the Treasurer for the Number Resource Organization for the 2021 fiscal year

A RIN's Financial Services Department (FSD) is responsible for customer billings, collection of accounts, accounts payable, budgeting, general accounting, and financial reporting.

The FSD team continued to deliver quality results for ARIN and the community as we spent another year working remotely. Some key projects completed are:

- The 2020 audit with a new audit team from BDO
- Our 2021 Form 990 for filing with the IRS
- The transitioning of our investment consulting services to Fiducient Advisors and the implementation of a new investment allocation strategy
- The 2022 budget, achieving the goal of delivering a balanced budget
- Our responsibility of acting as the Treasurer for the NRO for the 2021 fiscal year
- The initial implementation of our automated expense report tool

Some key statistics that summarize our year include:

- Preparing 27,300 invoices
- Posting cash receipts of \$22.9M
- Processing 900 disbursements transactions
- Answering 2,900 customer calls totaling 9,900 minutes

The FSD group receives and processes thousands of emails, phone calls, and tickets each year. As we head into 2022, our department is looking for ways to improve systems to make it easier for the community to transact business with ARIN. Through it all, FSD stays dedicated to providing our customers with the best service possible.

FROM THE CTO

2021 was another productive year for the Engineering Department. Like the rest of ARIN, our team mostly worked from home. In fact, we have hired a couple of new engineers whom many of us have seen on screen but not yet in person. Despite not having an office in which to work together on engineering tasks, we were able to keep to our schedule as planned.

Continuing our work from 2020 when we released our new IRR, we added new API features that mirror features you have found on the website. People can now either use the web UI or an API to do their important IRR updates.

In 2021, we experienced some widely distributed brute force login attacks. Based on these attacks we improved our system to follow NIST SP 800-53B, including login throttling and password guidelines. We also added a password generator that would honor our new password implementation.

We additionally added a new feature called “hybrid” RPKI. This feature allows a delegated RPKI user to utilize our repository. This feature was soft-launched at the end of 2021.

Some of our other accomplishments this past year include:

- Focusing on removing technical debt – moving many applications from seam to spring.
- Performing numerous upgrades to other IT and hardware systems.
- Making numerous performance improvements to directory services infrastructure (Whois, Whois-RWS, and RDAP)
- Creation of a fee calculator to show the 2022 fee changes
- RDAP improvements based on the NRO RDAP Profile Conformance effort
- Membership updates
- Focusing on removing old end-of-life equipment and tracking third-party software released to ensure our conformance.
- Oversight of the technical aspects of the virtual public-facing services associated with the biannual Public Policy and Members Meetings

To give another quick snapshot of our year, we closed three suggestions that involved engineering effort, and we had six major releases and 13 minor releases of ARIN Online over the course of 2021.

2022 promises to be another busy year for our team. We are looking forward to the challenges ahead and serving you as best as we can. Keep your feedback and ideas coming!

MARK KOSTERS

Chief Technology Officer

KEY TAKEAWAYS

Released new API features for the ARIN Internet Routing Registry

Improved systems to follow NIST SP 800-53B security guidelines

Added hybrid RPKI feature

Six major releases and 13 minor releases made to ARIN Online

Created RDAP improvements based on the NRO RDAP Profile Conformance effort

SERVICE REPORTS

ARIN reports on service level commitments and performance against those commitments for community-provided services. This report contains stated service level commitments and associated performance for community-provided services.

FINANCIAL SERVICES

100%

Send invoices for maintenance 30 days prior to the beginning of the customer's anniversary month.

100%

Send invoices for renewal IP allocations 45 days in advance of the beginning of the customer's anniversary month.

99%

Provide Customer Support from 9:00 AM to 5:00 PM Eastern Time, Monday through Friday, excluding holidays.

REGISTRATION SERVICES

100%

Provide Customer Support from 7:00 AM to 7:00 PM Eastern Time, Monday through Friday, excluding holidays.

100%

Provide issue escalation services from 10:00 AM to 4:00 PM Eastern Time, Monday through Friday, excluding holidays.

COMMUNICATIONS

100%

Provide Customer Support from 9:00 AM to 5:00 PM Eastern Time, Monday through Friday, excluding holidays.

22 APRIL

Publish ARIN's 2020 Annual Report by the first Public Policy and Members Meeting of the year.

100%

Publish meeting minutes and presentations online within 10 business days of meeting conclusion.

100%

Conduct two Public Policy and Members Meetings each year.

100%

Conduct annual elections for the ARIN Board of Trustees, ARIN Advisory Council, and the Number Resource Organization Number Council (NRO NC).

SERVICE REPORTS

ENGINEERING

100%

Auto reply for registration

100%

Auto reply for routing registry

100%

DNS Reverse Master Zones

100%

DNS provided by ARIN

99.99%

FTP data

100%

RESTful (Reg-RWS) Services

100%

Routing registry

100%

RWhois

100%

Web Whois

99.99%

Webserver (http)

99.99%

Webserver (https)

99.99%

ARIN Online

100%

RPKI Repository service

100%

RPKI provisioning

100%

Whois

100%

Whois-RWS

100%

RDAP

REGISTRATION SERVICES

LISA LIEDEL

Director,
Registration
Services
Department

KEY TAKEAWAYS

Launched the Premier Support Plan for 2-XLarge to 5-XLarge resource holders

Moved the Registration Services Agreement to the beginning of the resource request process

Implemented use of DocuSign for RSA processing

The Registration Services Department (RSD) worked diligently during 2021 to deliver all services despite the ongoing pandemic. ARIN continued to provide all services to which our community has had access over the years including phone, ARIN Online tickets, email, and chat. The necessity to work remotely did affect delivery times, but RSD worked hard while attempting to maintain the expected two business day turnaround on tickets. RSD hours continue to remain unchanged throughout the pandemic.

In addition to processing more than 20,000 tickets and 10,000+ customer contacts through the help desk, chat and emails, our largest projects this year were:

- Launching the Premier Support Plan for 2-XLarge – 5-XLarge resource holders
- Moving the Registration Services Agreement (RSA) from the end of the resource request process to the beginning with the Organization Identifier (Org ID) create process
- Implementing DocuSign use for RSA processing
- Completion of an Independent Audit
- Participation in the Fee Harmonization and Member Structure projects

Following the trend from 2020 numbers, RSD is still seeing an increase in the number of IPv4 allocation requests compared to recent historical norms. Both 2020 and 2021 saw roughly an 80% increase in the number of requests for IPv4 allocations compared to 2019. In fact, 2021 was the highest number of IPv4 requests since 2015.

ARIN launched our Premier Support Plan (PSP) for organizations in the fee size categories of 2-XLarge – 5-XLarge. The Premier Support Plan offers a Dedicated Account Analyst, Priority Service, Technical Services Liaison, 24/7 On-call Support, and more. We welcome all of our PSP customers and look forward to building strong relationships in the years to come. *(continued on next page)*

NOTABLE STATISTICS

IPv6 allocations increased by **15%** over 2020

8.4 Inter-RIR Transfers saw increases in requests (**59.5%**) and ticket completions (**36%**) over 2020

1,250 requests added to the IPv4 Waiting List

1,513 requests for Autonomous System Numbers

1,003 requests for IPv6

2,973 requests for Transfers (NRPM 8.2/8.3/8.4)

Almost **12,000** other ticketed requests to the help desk

Almost **6,200** help desk calls

Almost **2,900** Chats

REGISTRATION SERVICES



Director of Registration Services Lisa Liedel at ARIN 48 in Minneapolis, MN.

We moved signature of the Registration Services Agreement (RSA) from the resource request stage to the Organization Identifier (Org ID) phase to help streamline issuing resources to our customers. Collecting the RSA earlier means that all organizations who are able to manage registrations in ARIN Online are under an RSA, and that initial requests for resources can be completed more quickly, as an RSA is already in place. We also implemented the use of DocuSign for the signature process, eliminating all the manual efforts to print, sign, scan, and submit the RSA back to ARIN.

RSD secured an independent audit firm for their biennial audit in 2021. The audit focuses on how well the team of analysts and the management team adhere to policies as outlined in the Number Resource Policy Manual as well as all business rules and documented procedures/guidelines. The summary of the report will be shared with the community after final review by the Board of Trustees.

As always, members of the Registration Services Department have enjoyed working with our customers and we all look forward to working with you in the future.

HR & ADMIN

ERIN ALLIGOOD

Senior Director of
Human Resources
and Administration

KEY TAKEAWAYS

Limited Reopening
Program implemented
at ARIN offices for
employees on a voluntary
basis

Employee tenure average
exceeds eight years of
service

ARIN's Human Resources and Administration Department had a challenging, yet successful year in 2021. The department continued to focus on COVID-related efforts for ARIN staff and our facility. ARIN leveraged what we learned in the beginning phases of the COVID-19 pandemic. We continued to monitor office use time through our Limited Reopening Program, where employees were able to visit and work at the ARIN office under a voluntary program. Throughout 2021, ARIN continued to be successful in maintaining a remote workforce, while preserving the same excellent level of service to our members and community.

In addition, ARIN conducted a workforce study with an outside vendor in order to determine our future workforce plans after the pandemic. Employees also participated in a company-wide survey providing input on work preferences. From these two data sources, ARIN gained valuable information to determine that it will move into a hybrid work environment post pandemic. ARIN HR will be working closely with the management team on next steps for this important project as we roll out the hybrid work model in 2022.

After more than 24 years of service at ARIN, Cathy Clements will be retiring from ARIN in March 2022. Cathy has been with ARIN since its inception in 1997 and has served in various roles at ARIN. We are sincerely thankful for Cathy's dedication and service to our community over the years and wish her well in her retirement.

ARIN continues to enjoy an outstanding employee tenure record, even in this current remote pandemic environment. Our current average employee tenure is still exceptional, exceeding eight years of service. We thank our employees for their ongoing dedication and service to the ARIN community and organization.

The Human Resources and Administration team is looking forward to a healthy and productive 2022.



GOVERNMENT AFFAIRS

In 2021, the Government Affairs Department (GAD) team continued to perform its mission, including: developing and overseeing outreach and support to the law enforcement community; targeted outreach to cultivate and maintain relationships with governments and Internet industry groups in the Caribbean portion of the ARIN region; and maintaining external relationships with governments and key intergovernmental organizations for ARIN.

The department worked online for a second year due to the COVID-19 pandemic. We appreciate how fortunate we are to be able to do that, and recognize that is not the case worldwide. In fact, about half of the world is still unconnected. Cyber governance and the importance of securing the digital world are under discussion at the government level and the UN level, in addition to discussions on the capacity of our digital infrastructure to enhance social and economic resilience in the face of pandemics. The team was pleased to participate in these discussions in many different forums, including trainings, webinars, panels, and much more.

At the International Telecommunications Union (ITU), GAD participated in the two sectors of which ARIN is a member: Standardization (ITU-T) and Development (ITU-D). The team was an active participant in meetings of study groups, advisory groups, the ITU Council, preparation for the World Telecommunications Standardization Assembly (WTSA, postponed to March 2022), and preparation for the 2021 World Telecommunications Development Conference (WTDC, postponed to June 2022).

Regarding our work in the Caribbean, we organized several trainings/webinars in the Caribbean region covering Internet and network infrastructure, security, and access policy. “Evolving Judicial and Legal Practices for the Digital Age,” was the subject of a two-day online event hosted by ARIN and the Caribbean Agency for Justice Solutions (APEX) on 20–21 October 2021. This well-received, virtual event brought together leading jurists, technologists, lawyers, and scholars to share insights, experiences, and research as they discussed how regional and global technology trends are impacting the courts, justice delivery, the legal profession, and legal practitioners.

The GAD team also participated in a variety of other meetings, conferences and webinars with our RIR colleagues, ICANN, the Internet Governance Forum, regional, national and international law enforcement and public safety agencies, the IETF, and many other industry partners whose work intersects our own. We would like to highlight our work with one of our newest partners, the Messaging, Malware and Mobile Anti-Abuse Working Group (M3AAWG). ARIN is not only actively engaging with the M3AAWG community as a new member, but GAD staff is also serving as a Co-Chair of their newly established Names and Numbers Committee, a group focused on DNS abuse, cybersecurity, fraud, data accuracy and access, and Internet governance. *(continued on next page)*

**EINAR
BOHLIN**

Vice President,
Government Affairs

KEY TAKEAWAYS

Participated in two sectors of the International Telecommunications Union

Organized multiple training events in the Caribbean region

Partnered with the Messaging, Malware and Mobile Anti-Abuse Working Group (M3AAWG)

GOVERNMENT AFFAIRS

EINAR BOHLIN

Vice President,
Government Affairs

Towards the end of 2021 Anne-Rachel Inne revealed the bittersweet news that she would be taking a new position at the ITU. On behalf of the team, ARIN staff, and all of the ARIN community, congratulations to you Anne-Rachel, in your role as the ITU Regional Director for Africa! In other organizational news, the GAD team welcomed Einar Bohlin as the VP of the department.

In closing, the GAD team's efforts demonstrates that ARIN is staying alert and is able to forecast and often help navigate the effects of new international Internet public policies that could impact its work in support of the operation and growth of the Internet.

COMMUNICATIONS

In 2021, we took the lessons learned as we shifted to fully remote work and built on them, launching new programs and updating existing ones to meet the needs of a radically transformed community. Virtual and hybrid work and events required new skills and new approaches that challenged the whole team to come up with creative solutions. I am happy to say we hit all our strategic goals while also pulling in new projects as need arose.

We continued to focus on the customer experience. The ARIN Optimized Program was developed and successfully launched in December of 2020 to provide on-boarding training for new customers. We hosted sessions quarterly. We also continued to grow our on-demand training library and hosted webinars including Enhance Your Routing Security with RPKI, Getting to Know IRR-Online at ARIN, and Using ARIN's RESTful API for IRR. We also hosted seven special training sessions as part of our Strategic Partnership Program. This program was designed as a way to continue our outreach to industry organizations where we would typically have a Help Desk or present at their conferences. This outreach successfully reached more than 400 organizations to make them aware of their options to get Internet number resources directly from ARIN.

We successfully hosted the ARIN 47 and ARIN 48 Public Policy and Members Meetings with attendance and participation numbers consistent with our in-person meetings pre-pandemic. ARIN 47 was held as a virtual event, and ARIN 48 was our first venture into hosting a fully hybrid meeting session to allow full participation for both in-person and virtual attendees. We discovered that the hybrid format does have very different audio/visual and webcast requirements that resulted in increased costs and significantly different staff-tasking to support the event. Feedback was strongly in favor of continuing with the hybrid model for 2022.

One of the programs we missed during 2020 was our popular Fellowship Program. Fortunately, in 2021 we were able to transition the program to a virtual format. This allowed for a more structured curriculum and deeper engagement between mentors and fellows. Nineteen fellows completed the program in 2021. We also had another successful year with the Community Grant Program. Seven of the 2020 recipients provided reports on the outcome of their projects at ARIN 48, and we welcomed a new group of grant recipients for 2022.

It was also an active year for the ARIN Consultation and Suggestion Process. We had six consultations and 28 suggestions over the course of the year. Based on the outcome of the consultations, we were quite busy coordinating with Registration Services and Financial Services to prepare for the new 2022 Fee Schedule and changes to the ARIN membership model. This work will continue in the form of educational outreach to customers in 2022. *(continued on next page)*

**HOLLIS
KARA**

Director of
Communications

KEY TAKEAWAYS

Hosted quarterly sessions
of ARIN Optimized

Grew on-demand training
library, including webinars
on RPKI and IRR

Hosted ARIN 47 and
ARIN 48 Public Policy and
Member Meetings

Transitioned our
Fellowship Program
to virtual

Migrated the ARIN Blog
to the ARIN website

COMMUNICATIONS

HOLLIS KARA

Director of
Communications

One highlight of our year was completing the migration of the ARIN blog to <https://www.arin.net/blog> and the retirement of the old Team ARIN website. Not only did this project reduce efforts and costs associated with maintaining two websites, but it has also successfully increased the visibility of the ARIN blog which resulted in a 50% increase in views for the year. Other improvements include better navigation, a more robust event calendar, and an option for readers to subscribe to blog updates.

It was a year of growth and change as we worked to meet the rapidly evolving needs of the ARIN community and organization. We said farewell to several longtime members of the team and brought fresh energy and ideas to the mix as we welcomed new staff. As always, I am grateful for the opportunity to work with such a talented group of professionals to further ARIN's mission.



Director of Communications Hollis Kara at ARIN 48 in Minneapolis, MN.

OUTREACH EVENTS

NANOG 81 (Virtual)

8-10 February 2021

Speaker: Mark Kosters,
“In Conversation: RIRs Talk Tech”

APNIC 51 with APRICOT (Virtual)

22 February-4 March 2021

IETF 110 (Virtual)

8-10 March 2021

ARIN Optimized (Virtual)

9 March 2021

ICANN 70 Virtual Community Forum

22-25 March 2021

CanWISP 2021 Conference (Virtual)

30-31 March 2021

Virtual Help Desk

CaribNOG 21 (Virtual)

30-31 March 2021

ARIN 47 (Virtual)

12-14 April 2021

WISPamerica 2021

14-17 April 2021

New Orleans, LA

Speaker: John Sweeting,
“Achieving Address Autonomy”

LACNIC 35 (Virtual)

10-14 May 2021

RIPE 82 Online (Virtual)

17-21 May 2021

ARIN/CTU Caribbean Internet Public Policy Forum 2021 (Virtual)

18-19 May 2021

ARIN/CaribNOG Technical Community Forum (Virtual)

20 May 2021

ARIN Optimized (Virtual)

08 June 2021

ICANN 71 Virtual Policy Forum

14 -17 June 2021

NANOG 82 (Virtual)

14-16 June 2021

Caribbean Peering & Interconnection Forum (CarPIF 7) (Virtual)

07 July 2021

IETF 111 (Virtual)

26-30 July 2021

CANTO 2021 (Virtual)

28-30 July 2021

Speaker: Bevil Wooding,
“The State of the Internet — Significant Trends and Changes in Year Two of the Pandemic”

Caribbean Public Safety Forum (Virtual)

01 September 2021

APNIC 52 (Virtual)

13-16 September 2021

ARIN Optimized (Virtual)

14 September 2021

CTU ICT Week 2021 (Virtual)

20-24 September 2021

OUTREACH EVENTS

CaribNOG 22 (Virtual)

29 September 2021

Speakers: Leslie Nobile, Bevil Wooding,
“Opening Remarks”

Speaker: Lisa Liedel, “iOrg Updates”

Virtual South School on Internet Governance 2021 (Virtual)

8 October 2021

LACNIC 36 / LACNOG 2021

11–15 October 2021

Montevideo, Uruguay/Virtual (Hybrid)

Indigenous Connectivity Summit (Virtual)

12–15 October 2021

Speaker: John Sweeting,
“IP Address Space (and Fellowships)”

ARIN 48 Public Policy and Members Meeting

19–20 October; 28 October; 4 November 2021
Minneapolis, MN/Virtual (Hybrid)

ICANN 72 (Virtual)

25–28 October 2021

NANOG 83 (Virtual)

1–3 November 2021

Registration Services Help Desk

Speaker: John Curran, “ARIN Update”

Speaker: Brad Gorman,
“IRR Spring Cleaning”

IETF 112 (Virtual)

8–12 November 2021

RIPE 83 (Virtual)

22–26 November 2021

IGF 2021

6–10 December 2021

Katowice, Poland/Virtual (Hybrid)

ARIN Optimized (Virtual)

14 December 2021

LIVE WEBINARS

Using ARIN’s RESTful API for IRR

27 April 2021, 4 May 2021

IPv6 Address Planning Basics

13 May 2021

Leadership Development Training 2021

20 May 2021

Getting to know IRR–Online at ARIN

27 May 2021

Enhance your Routing Security with ARIN’s Hosted RPKI

26 August 2021, 2 September 2021

POLICY DEVELOPMENT

The ARIN community engages in a Policy Development Process (PDP) to define how ARIN will manage and administer Internet number resources (IP addresses and Autonomous System Numbers). Community decisions are recorded as policies and published in the Number Resource Policy Manual (NRPM), available at <https://www.arin.net/nrpm>.

In 2021, 11 proposals were submitted to policy@arin.net. Two were classified as editorial updates. One was withdrawn by the author. The remaining eight were advanced to Draft Policies and discussed by the community on the Public Policy Mailing List. One was promoted to Recommended Draft Policies as a result of community discussions and subsequently sent to Last Call in December 2021. The remaining seven Draft Policies are under discussion as of 31 December 2021.

PUBLIC POLICY DISCUSSIONS

One of the features of the PDP is the opportunity to discuss policy proposals and changes at not only ARIN's biannual Public Policy and Members Meetings (PPMMs), but also Public Policy Consultations (PPCs), which are held at other forums approved by the Board of Trustees. In 2020, due to the COVID-19 pandemic, ARIN's two biannual PPMMs were held virtually. View the reports for each meeting at <https://www.arin.net/participate/meetings/past>.



Information about current draft policies and past policy proposals is available at:

<https://www.arin.net/participate/policy/drafts/>

Subscribe to the Public Policy Mailing List (PPML) and discuss ideas for new policies, pending proposals, and draft policies:

https://www.arin.net/ mailing_lists/

Participate in biannual Public Policy and Members Meetings or other Public Policy Consultations in person or remotely:

<https://www.arin.net/participate/meetings/>

Submit a proposal to create a new policy or to revise current policy.

Read and follow the instructions in the PDP and submit your proposal:

<https://www.arin.net/pdp/>



ADVISORY COUNCIL

2021 ADVISORY COUNCIL MEMBERS

Owen DeLong
(resigned 8 June 2021)

Andrew Dul

Kat Hunter
Vice Chair

Anita Nikolich

Amy Potter

Joe Provo

Alyssa Quinn

Kerrie Richards

Leif Sawyer
Chair

Robert Seastrom

Chris Tacit

Alicia Trotman

Matthew Wilder

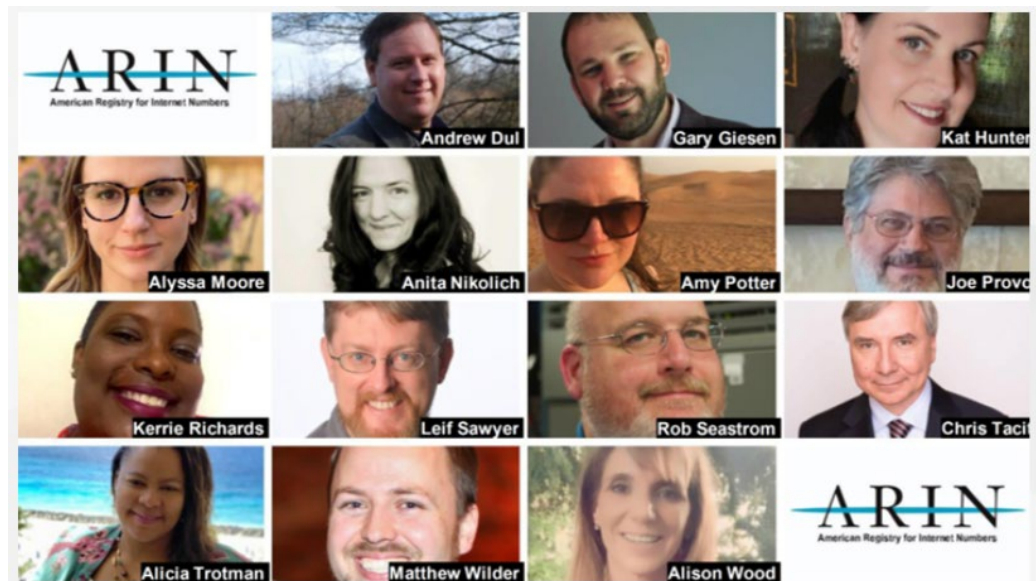
Alison Wood

The Advisory Council (AC) advises the Board of Trustees on Internet number resource policy and related matters and forwards Recommended Draft Policies to the Board for ratification, in adherence with the Policy Development Process (PDP).

In 2021, the AC consisted of 15 elected members and ARIN's President and CEO, who serves as an ex-officio member and AC-Board liaison. Each year, the AC holds three in-person meetings and approximately nine teleconferences. In 2021, the AC met via teleconference the entire year. View meeting minutes at <https://www.arin.net/about/welcome/ac/meetings>.

2021 ELECTION RESULTS

In November 2021, Brian Jones and Chris Woodfield were elected, and incumbents Kat Hunter, Amy Potter, Kerrie Richards, Rob Seastrom, and Alicia Trotman to serve three-year terms on the AC beginning 1 January 2022. Read ARIN's election guidelines at <https://www.arin.net/participate/oversight/elections/processes>.



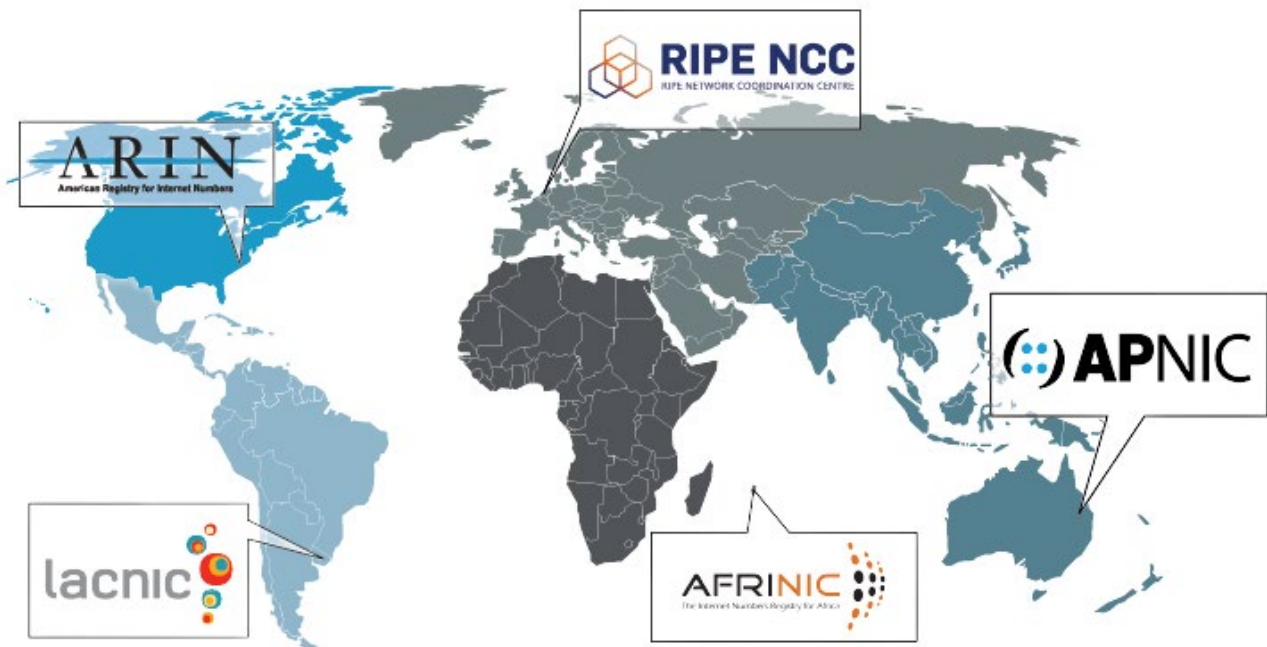
GLOBAL POLICY & NRO

The Number Resource Organization (NRO) is a coordinating body for the five Regional Internet Registries (RIRs) – AFRINIC, APNIC, ARIN, LACNIC, and RIPE NCC.

The NRO Number Council (NRO NC) fulfills the role of the Internet Corporation of Assigned Names and Numbers (ICANN) Address Supporting Organization Address Council (ASO AC), providing advice to the Board of ICANN on global Internet number resource policy, in conjunction with the RIRs.

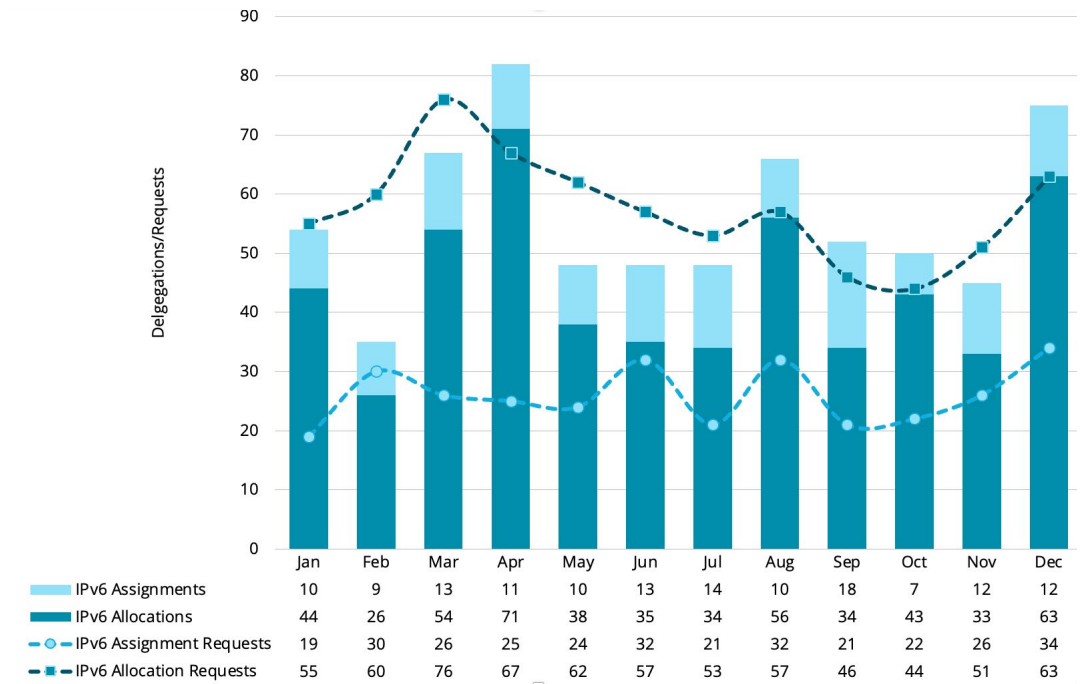
There are three NRO NC representatives from each RIR region. The members from the ARIN region for 2021 were Kevin Blumberg, Martin Hannigan, and Louie Lee. After nearly two decades of service to the ARIN community, Louie Lee retired his seat on the NRO NC in 2021, and Chris Quesada was voted to fill the open seat in the 2021 ARIN Elections.

We thank all of them for their service and commitment to the global Internet community.

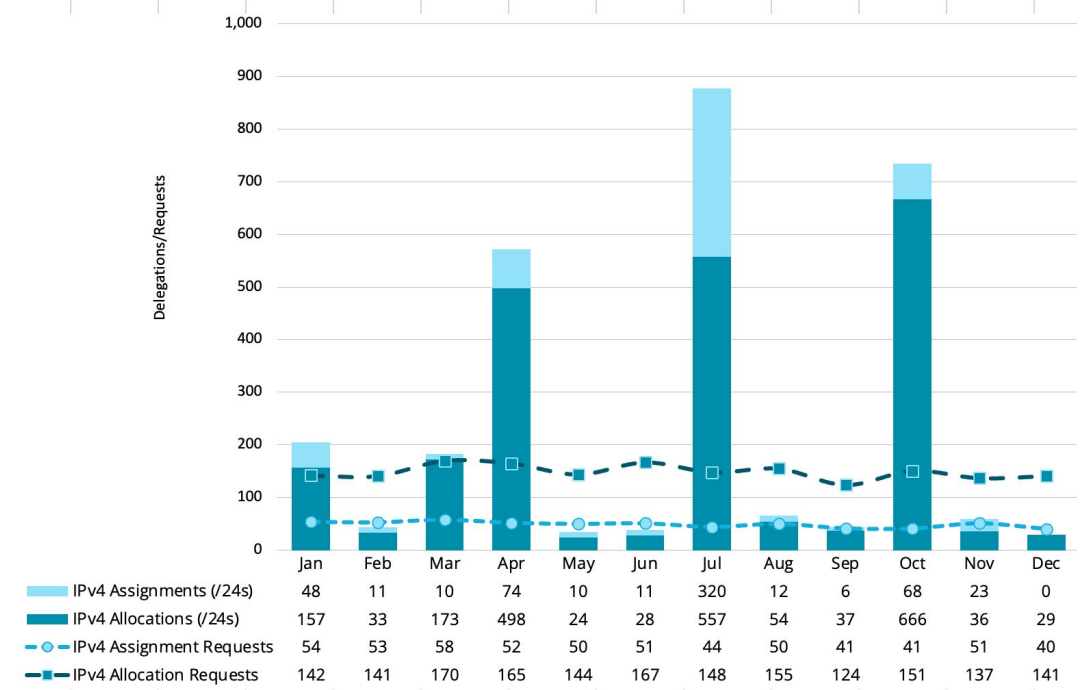


STATISTICS & REPORTS

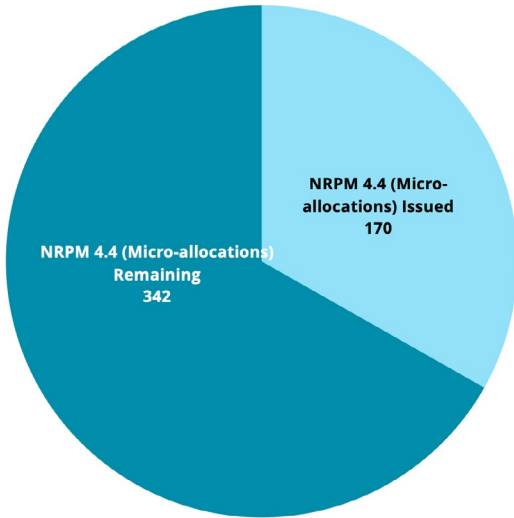
2021 IPv6 Address Space Issued and Requested (by category)



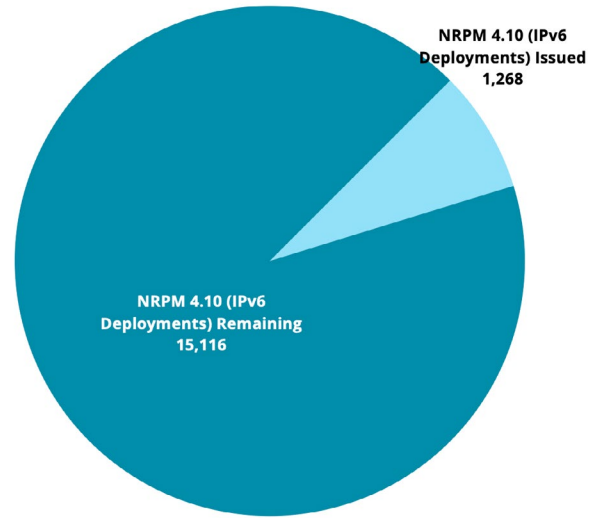
2021 IPv4 Address Space Issued and Requested (by category)



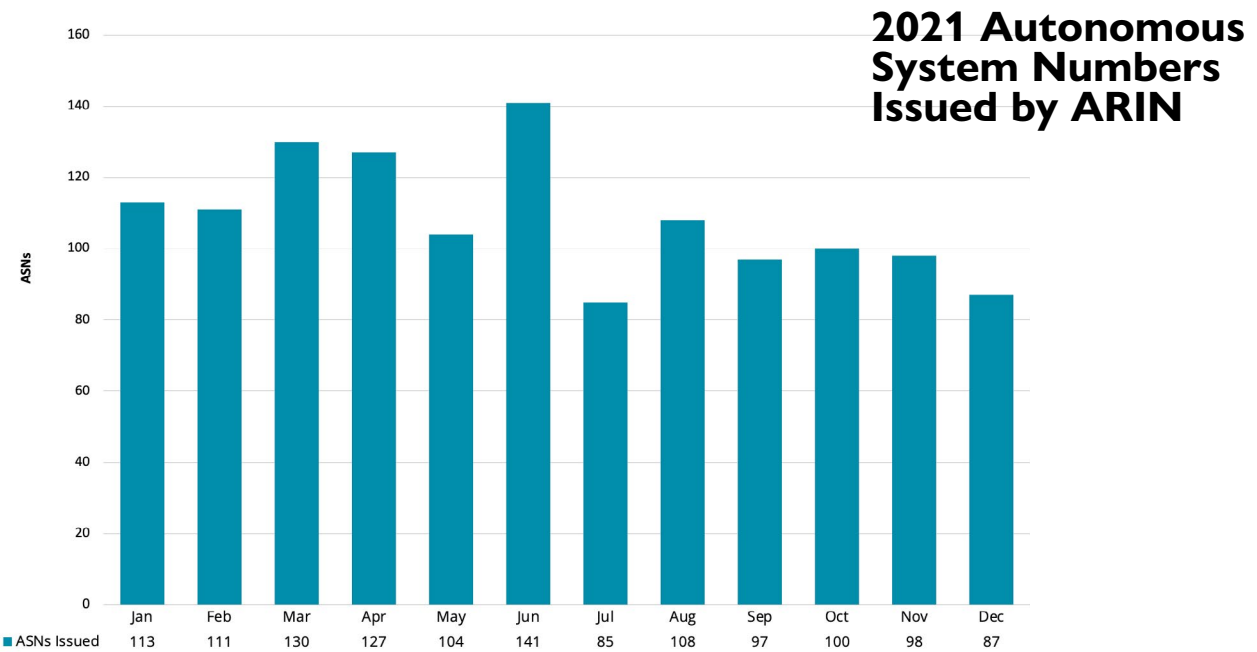
STATISTICS & REPORTS



**IPv4 Reserved Pool Status
— NRPM 4.4**
(micro-allocations)

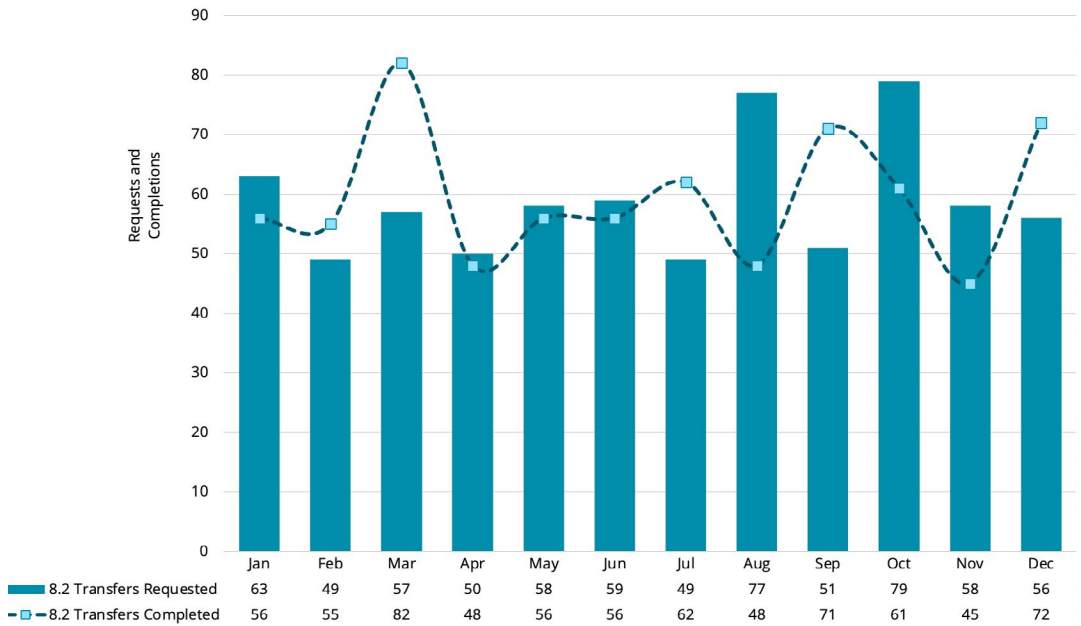


**IPv4 Reserved Pool Status
— NRPM 4.10**
(IPv6 deployments)

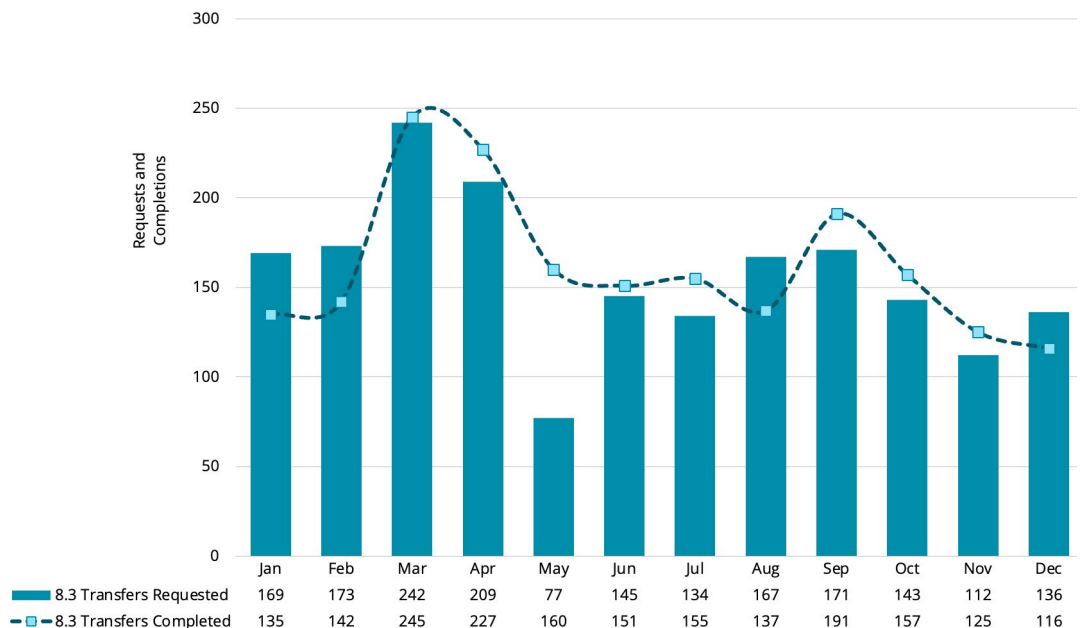


STATISTICS & REPORTS

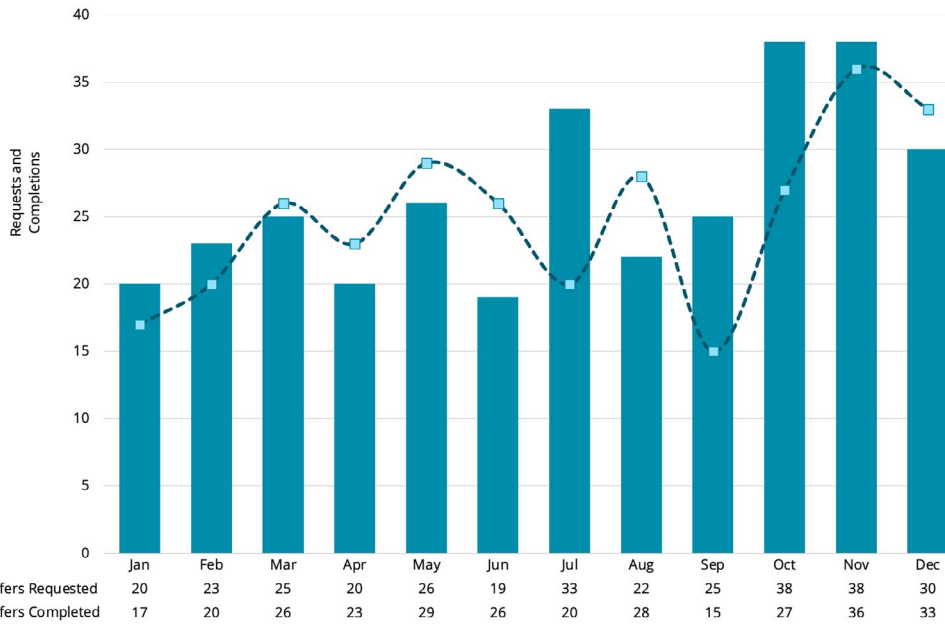
2021 8.2 Transfers Requested and Completed



2021 8.3 Transfers Requested and Completed



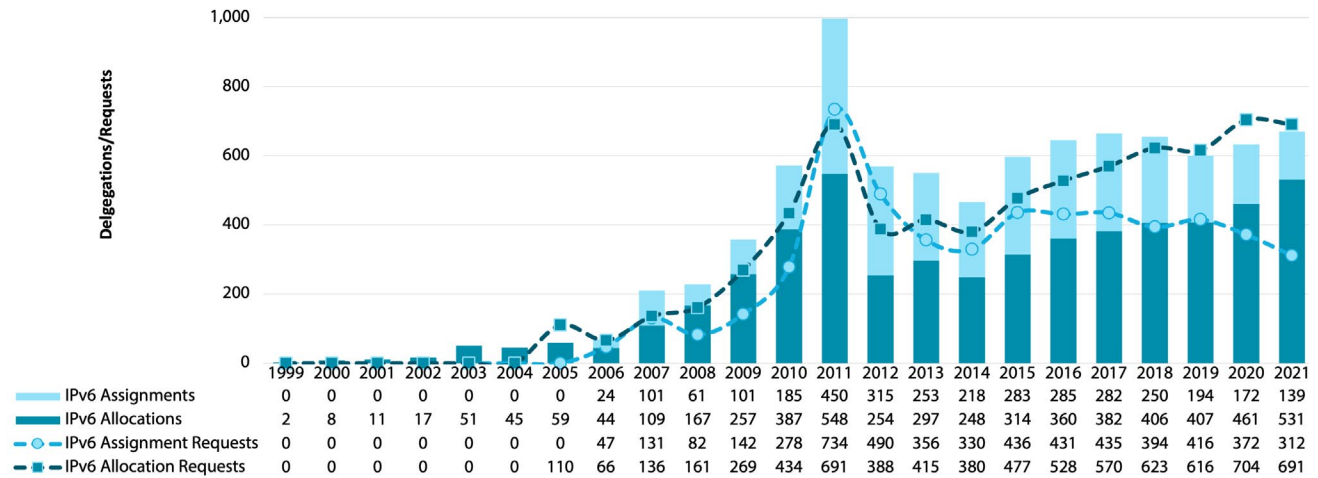
STATISTICS & REPORTS



**2021 8.4
Transfers
Requested
and
Completed**

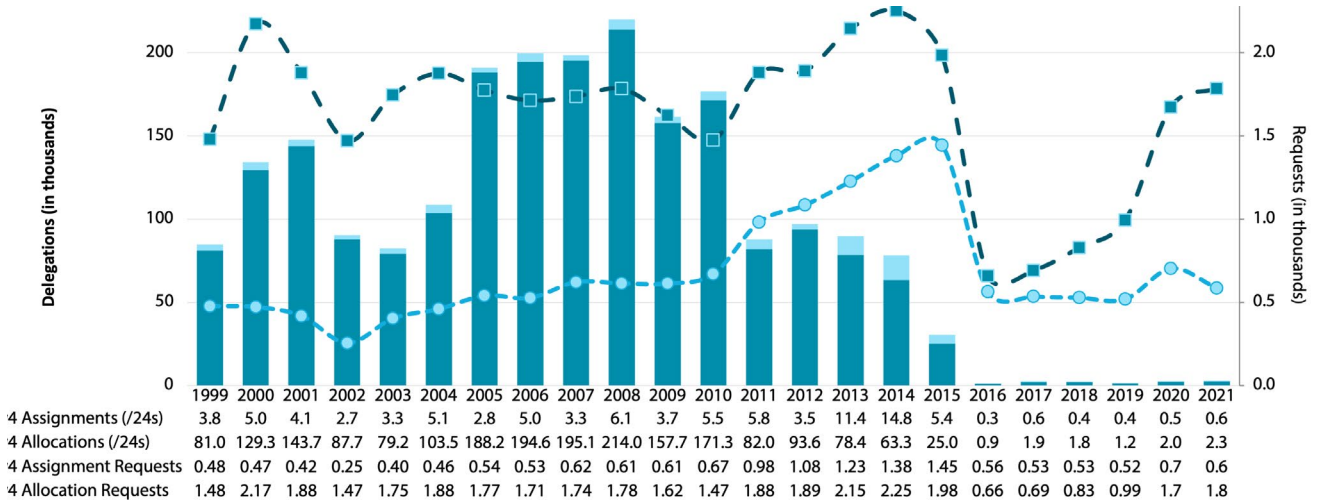
HISTORICAL REPORTS

ARIN IPv6 Address Space Issued and Requested (by category) 1999-2021

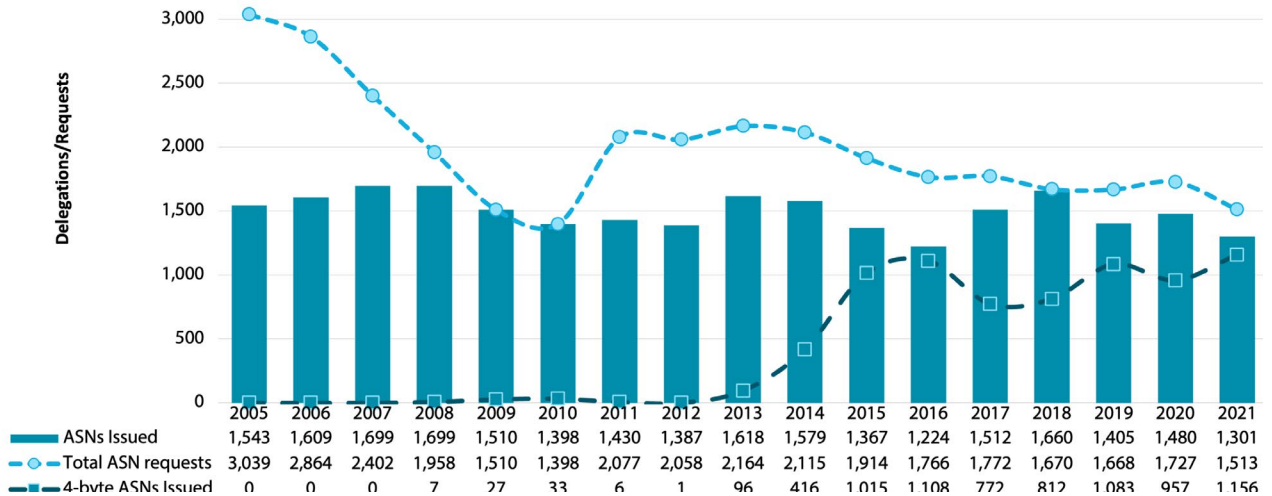


STATISTICS & REPORTS

ARIN IPv4 Address Space Issued and Requested (by category) 1999-2021

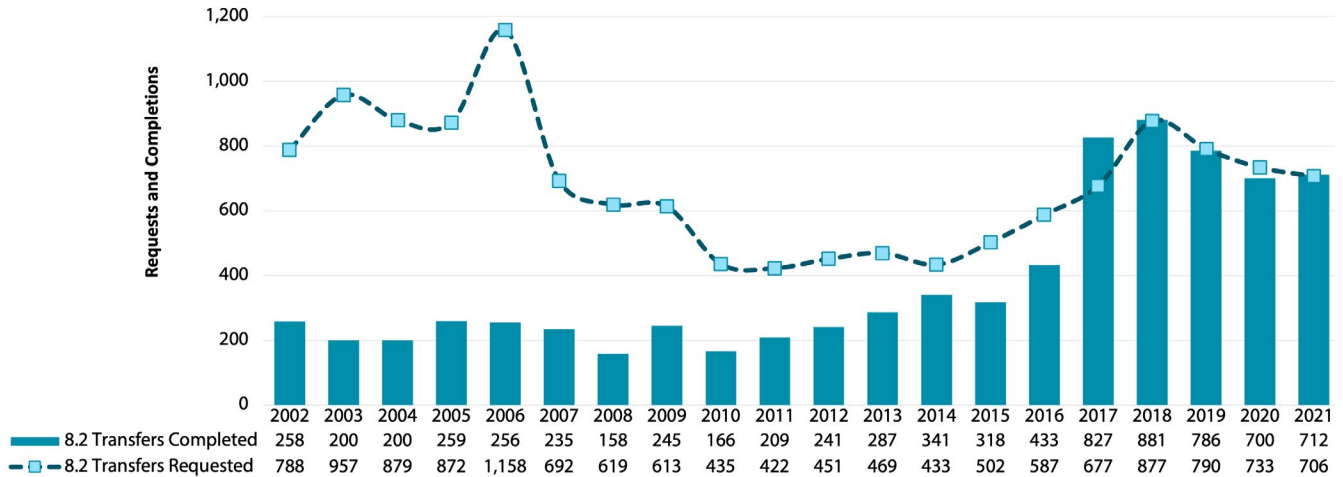


ARIN Autonomous System Numbers Requested and Issued 2005-2021

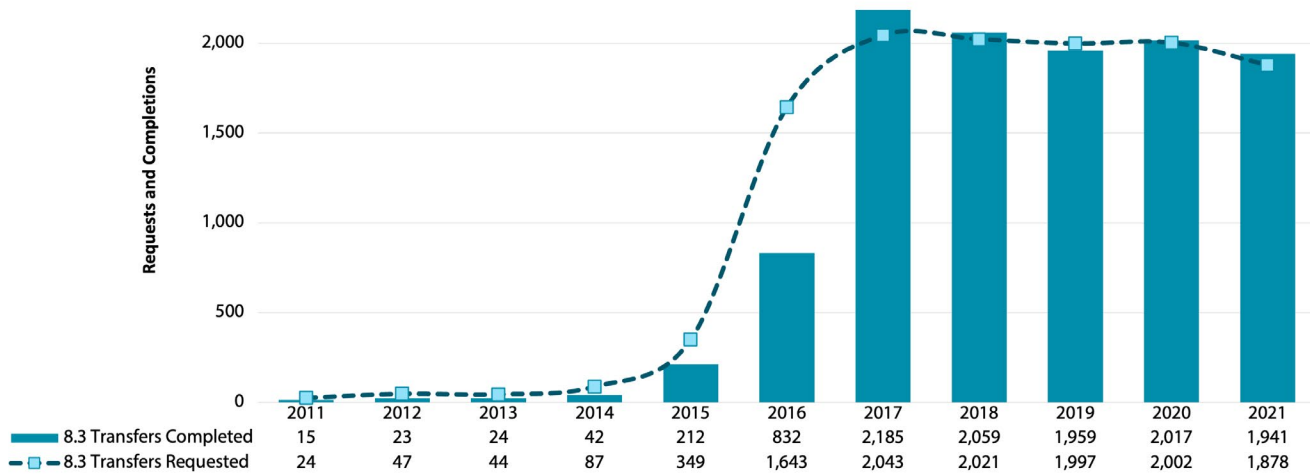


STATISTICS & REPORTS

Classic or 8.2 Transfers Requested and Completed 2002-2021

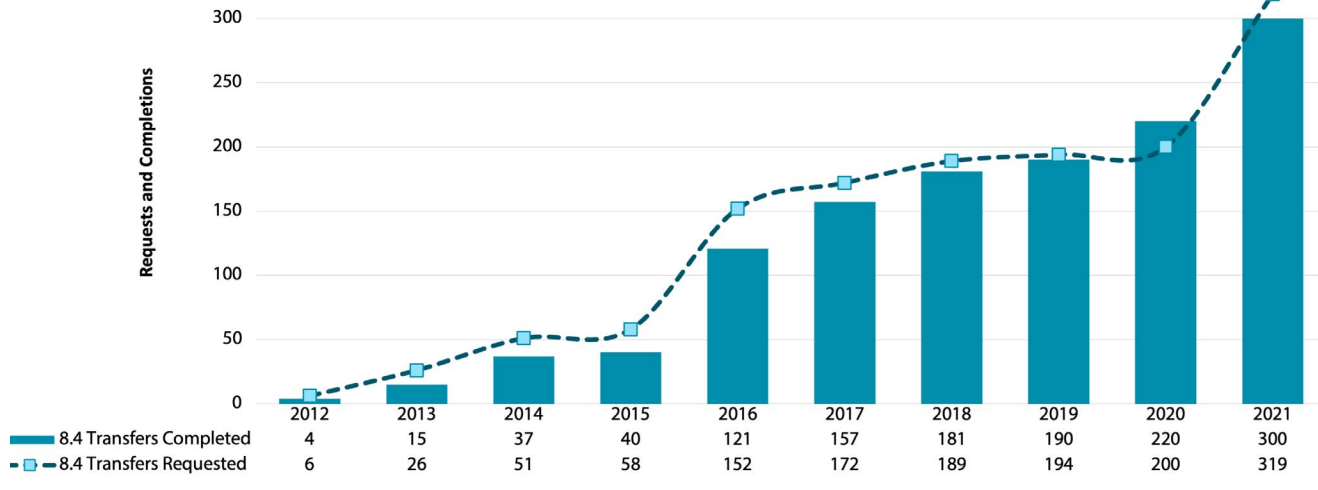


8.3 Transfers Requested and Completed 2011-2021



STATISTICS & REPORTS

8.4 Transfers Requested and Completed 2012-2021



AUDITOR'S REPORT

ARIN operates as a nonprofit 501(c)(6). Federal guidelines do not require nonprofit organizations to undergo an annual financial audit. However, the ARIN Board of Trustees believes a financial audit is the best tool for oversight of financial management.

ARIN has an annual financial audit performed by an independent, outside firm to fulfill the Board's fiduciary responsibility to the community. The financial statements for the year ending 31 December 2021 will be made available for community review on ARIN's public website following the conclusion of our audit.

