



addressing the Internet in the Asia Pacific

2020

Annual Report



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EXECUTIVE COUNCIL



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Paul Wilson, Ex-officio
Director General,
APNIC



WELCOME FROM THE DIRECTOR GENERAL

I do believe that 2020 was the most challenging year ever for APNIC and for APNIC Members as a community, and of course for our staff, friends and families. The COVID-19 pandemic caused enormous suffering to millions across our region, and enormous upheaval for every one of us, in the way we work and live.

The pandemic has again proven the critical importance of the Internet, and its ability to sustain society in ways that were never predicted or practiced. Yet in spite of the extra demands and stresses, the Internet hardly missed a beat. It continued to operate smoothly despite changing traffic and usage patterns, due in no small part to the work of network operators around the world, and in the APNIC community.

We have all adapted to new ways of work and life, and if I had to characterise 2020 for APNIC it has been a year of agility and cooperation. The following Annual Report details APNIC's activities during the year, but I'd like to share some of the highlights here.

Supporting Asia-Pacific NOGs.

With most NOG events cancelled or postponed in early 2020, the Networking from Home (NFH) series was designed to encourage continued online networking and education. Organised with the support of 21 NOGs, the four events attracted 1,219 participants from 45 economies, received great feedback from the community, and provided a template for online NOG events.

APNIC was also pleased to be able to assist six NOGs hold individual online events following the NFH model, and support 13 more with sponsorship, presentations and participation in program committees.

Adapting training delivery.

Just 10 face-to-face training sessions were held in 2020, before the pandemic arrived in February. From that point, the APNIC Academy expanded its online activities rapidly, with 46 live online tutorials and 18 live webinars reaching 4,982 participants.

Those live training events were supported by on-demand courses and labs taken by up to 11,610 registered users, who received 2,519 completion

certificates during 2020. Thousands more engaged with online 'Academy Socials', featuring live interaction with well-known networking experts, via Facebook.

Growing RPKI and IPv6.

Training, promotion and technical assistance continued, to encourage ongoing deployment of both RPKI and IPv6. The percentage of Members with ROAs grew from 27.2% to 50.7%, with Mongolia achieving 100% ROA coverage in October. IPv6 capability for the APNIC region was 35.3% as measured by APNIC Labs, an increase on 2019's level of 30%. The proportion of Members who hold IPv6 resources increased 5.6% to 66.3%.

Reclaiming unused IPv4.

For the first time in several years APNIC's available IPv4 pool grew in size, thanks to efforts to reclaim unrouted and unused IPv4 space. Around 1.1 million IPv4 addresses (more than a /12) were voluntarily returned to the available pool following contact with the custodians by APNIC. This work – resulting from community feedback in the 2018 and 2020 APNIC Surveys – will continue in 2021.



WELCOME FROM THE DIRECTOR GENERAL - CONTINUED

Providing network information.

The new Dashboard for AS Health (DASH), was launched to provide operators with network security metrics using data from APNIC's community honeynet, and an updated version of NetOX with Chinese language options (among other improvements) was released at APNIC 50.

A new global ROV monitor was launched by APNIC Labs, similar to its well-known IPv6 measurement tool. These tools were complemented by the APNIC Blog, which passed the milestone of 2.5 million views in October and increased its monthly views by 35%.

Behind the Scenes.

There were also many less visible achievements, behind the scenes at the APNIC Secretariat.

A full external recertification audit of APNIC's ISO9001:2016 quality management system was successfully completed. A new gigabit IX peering connection with APNIC's data centre was established, as well as redundant peering with Google. The APNIC network was deemed MANRS-compliant. The focus on Agile methods continued internally, with certification in Agile Fundamentals extended to all APNIC teams.

And on top of these achievements was the extensive 'COVID-safe' response to ensure the safety and productivity of the Secretariat during the pandemic. I'm pleased to say there was no disruption to APNIC services as a result and, as you will see in this Annual Report, a great deal of successful activity.

I do want to thank APNIC Staff, and acknowledge the efforts of 2020, a truly extraordinary year for the APNIC Secretariat.

Finally, I must also sincerely thank all Members, and members of the APNIC community, for your support and cooperation with the Secretariat and with each other in 2020. As a community we have successfully navigated the challenges of 2020 and maintained a stable Internet.

While the pandemic continues, APNIC will continue to play its part in 2021, as we hopefully see lives returning to normal in the coming year.

Paul Wilson

Director General





WELCOME FROM THE EXECUTIVE COUNCIL CHAIR

On behalf of the Executive Council (EC), welcome to APNIC's 2020 Annual Report.

We had no idea that APNIC 49 (APRICOT 2020) in Melbourne was going to be the last of the large face-to-face conferences globally for the Internet industry. It was the 25th anniversary for APRICOT, a celebration of the enduring strength of the network operator community. And we were all set to celebrate APNIC 50 in Bangladesh in September.

You all know how the story went, though. Very few of us could have envisaged the year we had.

While there's no doubt that 2020 was incredibly difficult, what I take away from the experience is that enduring strength of the community that was celebrated in Melbourne.

As you'll read in this report, the Secretariat worked hard to adapt and stay connected during the pandemic. But I'd like to thank the APNIC community for its ongoing commitment and participation despite the challenges of COVID-19. That enthusiasm and spirit has helped maintain community cohesion through a difficult time for all of us.

Excellent survey response

The community's enthusiastic participation was highlighted by the record response to the APNIC Survey, with 1,624 responses received (31% more than the previous survey in 2018). The 2020 survey was available in 16 languages and 35% of respondents chose to complete the survey in a language other than English. The huge response is much appreciated by the EC, as the feedback gathered about APNIC's performance and the priorities of the community shapes APNIC's plans for future years.

The EC's response to the survey has been published and you can read some of our thoughts in more detail there. There are a couple of points, however, that I'd like to highlight here.

In past surveys there has been a rise in the endorsement of APNIC from Members and the community. In 2016, the number of respondents who spoke highly of APNIC was 41% and in 2018, that number increased to 56%. I'm thrilled to say that in the latest survey, that number rose again to 66% of respondents.

Similarly, when Members were asked whether APNIC was transparent in its activities, 89% of Members

answered positively in 2020, an increase on the previous two surveys (2018: 87%, 2016: 74%).

To witness the continuing upward trend in these two important metrics is very pleasing for the EC, as it is a strong indicator that both the long term strategy and annual operational delivery by APNIC is in line with the wishes of Members and the community.

Meeting the demand for Internet development support

APNIC's training and development efforts over the years have aimed to help meet the growing demand for a secure and stable Internet in the region. But the appetite for support has always far outstripped APNIC's resources.

The APNIC Foundation's efforts over the past four years to increase Internet development in the Asia Pacific has certainly helped, but the creation of the Asia Pacific Internet Development Trust, thanks to the initiative of Professor Jun Murai and the WIDE Project, means that the promise of the APNIC Foundation will be realised much sooner. With APIDT's support, the potential benefits the Foundation can generate for the region will be much larger.

WELCOME FROM THE EXECUTIVE COUNCIL CHAIR - CONTINUED

While the establishment of the Trust in 2020 probably went unnoticed by most Members, I believe there is a very good chance that, in the years to come, the APNIC community will look back on its creation as a critical milestone. In 2021, I hope the community will begin to see the potential opportunities it provides to the region.

On behalf of the APNIC EC, membership and community, I would again like to thank Professor Murai for initiating this very exciting development, and I reiterate APNIC's commitment to working together with the Foundation and the Trust for the development of the Internet in the Asia Pacific.

Looking ahead

It's clear the challenges we face from the pandemic are far from over as we enter 2021. This means that face-to-face gatherings and conferences will be unlikely, but the positive spirit of online cooperation we saw in 2020 will hopefully continue.

I am looking forward to the day that we can all gather again as one community for an APNIC conference. There will be many missed celebrations to catch up on and friends to see. Until then, you can of course still

contact me and the rest of the EC with any feedback you have. We are your representatives and are here to listen.

Thank you to all the staff at the Secretariat for your hard work in 2020. The achievements in this report show strong resolve during a trying year.

And thank you again to all Members and the community for your continued support of APNIC.

I look forward to meeting with you at events around the region in 2020 and continuing the discussion online. Thanks again for your continued support of APNIC.

Gaurab Raj Upadhaya





Vision and Mission

APNIC's Four Year Strategic Plan (2020-2023) introduced an updated Vision and Mission, and a new structure for activities under five strategic pillars (detailed on the following page).

VISION

A global, open, stable, and secure Internet.

MISSION

To provide essential services as a Regional Internet Registry, and to support Internet development in the Asia Pacific region.

PURPOSE

To serve our community.

IDENTITY

A not-for-profit trusted authority on Internet infrastructure.

VALUES

Passion
Trust
Curiosity
Accountability
Inclusion

CREDO

We are APNIC.
One team dedicated to making a positive impact.
Our ambition will be achieved by working together.
Trust and respect for each other are not negotiable.
Inclusion and diversity really matter to us.
We take pride and excel in everything we do.
We are curious. We are accountable.
We are APNIC.



Strategic Pillars



1. MEMBERSHIP

Develop and deliver world-class products and services required by APNIC Members.

Engage with Members in building a global, open, stable and secure Internet.

Ensure accountable governance of APNIC as a membership organization.



2. REGISTRY

Develop and deliver world class registry products and services required by the community.

Ensure responsible stewardship of Internet number resources and deliver accurate registry services.



3. DEVELOPMENT

Invest in sustainable development of the regional Internet community, industry and infrastructure.

Build capacity for best-practice Internet operations across the Internet technical community.



4. INFORMATION

Support Internet development with needed network information services, and research outcomes which are of demonstrated value to the community.



5. CAPABILITY

Provide stable and secure technical infrastructure to support APNIC operations and services.

Develop a strong service culture driven by people committed to APNIC's vision and values.

Sustain a healthy and resilient organization.



APNIC Workstreams

The Four Year Strategic Direction (2020-2023) defines 18 workstreams, across the five pillars, as follows. Each workstream includes a number of activities that are described in this plan.



1. MEMBERSHIP

- 1A. MEMBER SERVICES**
Deliver excellence in service and value to Members through active and quality engagement.
- 1B. MEMBERSHIP PRODUCTS**
Apply best practice in development of membership products that meet Members' needs and exceed their expectations.
- 1C. MEMBERSHIP REPORTING**
Ensure that APNIC remains fully accountable to its Members, by providing timely and accurate information about APNIC operations.



2. REGISTRY

- 2A. REGISTRATION SERVICES**
Provide delegation and registration services for Internet numbers (ASNs, IPv4, IPv6) according to community developed policies.
- 2B. REGISTRY PRODUCTS**
Maintain an accurate number registry and reliable registry services.
- 2C. POLICY DEVELOPMENT**
Facilitate the open Policy Development Process to ensure resource policies in the APNIC region are developed and implemented in a neutral manner consistent with agreed rules and community expectations.



3. DEVELOPMENT

- 3A. APNIC CONFERENCES**
Deliver engaging and relevant APNIC conferences for learning, sharing ideas and experience, professional networking, and Internet policy development.
- 3B. FOUNDATION SUPPORT**
Provide financial and operational support to ensure the success of the APNIC Foundation.
- 3C. COMMUNITY ENGAGEMENT**
Build and maintain close and meaningful relationships between APNIC and its various communities.
- 3D. COMMUNITY PARTICIPATION**
Encourage awareness, diversity, participation, and leadership in APNIC processes, events, and activities.
- 3E. APNIC ACADEMY**
Scale up training and technical assistance infrastructure with high-quality training content and curriculum.
- 3F. INTERNET INFRASTRUCTURE SUPPORT**
Promote and support the deployment of critical Internet infrastructure and deploy tools for operational infrastructure monitoring.



4. INFORMATION

- 4A. INFORMATION PRODUCTS**
Provide meaningful information services to the communities APNIC serves.
- 4B. RESEARCH AND ANALYSIS**
Analyse the pressures shaping the evolution and future demands of Internet names and numbers infrastructure, and their impacts.



5. CAPABILITY

- 5A. INTERNAL TECHNICAL INFRASTRUCTURE**
Provide stable and secure technical infrastructure to support APNIC operations and services.
- 5B. FINANCE AND BUSINESS SERVICES**
Provide efficient and robust finance and business services and facilities to effectively support APNIC's operations.
- 5C. EMPLOYEE EXPERIENCE**
Attract, develop and retain talented, service-oriented people to deliver APNIC's mission and exceed organization and community expectations.
- 5D. GOVERNANCE**
Provide the legal, economic and governance framework and professional services to support APNIC's operations to minimize risk and ensure compliance and continuity.



2020 at a Glance

2020



Blog

Record Blog views

64,778 /month

4A.1



Training

Live online training

46 live courses

2,434 participants

18 live webinars

2,548 attendees

3E.3



IPv4 reclaimed

1.1m

IPv4 addresses were **reclaimed**

2A.4



Available Resources

0.79%
IPv4

91.8%
IPv6

3.59%
ASN

2A.1



RPKI

Members with ROAs

50.67%



86% up

3E.6



IPv6 Growth

Members with IPv6 addresses

66.32%

Asia Pacific IPv6 capability

35.3%

2A.1

New information tools

DASH/NetOX/ROV monitor

4A.2

Networking From Home

4 events
from **45** economies



3C.1

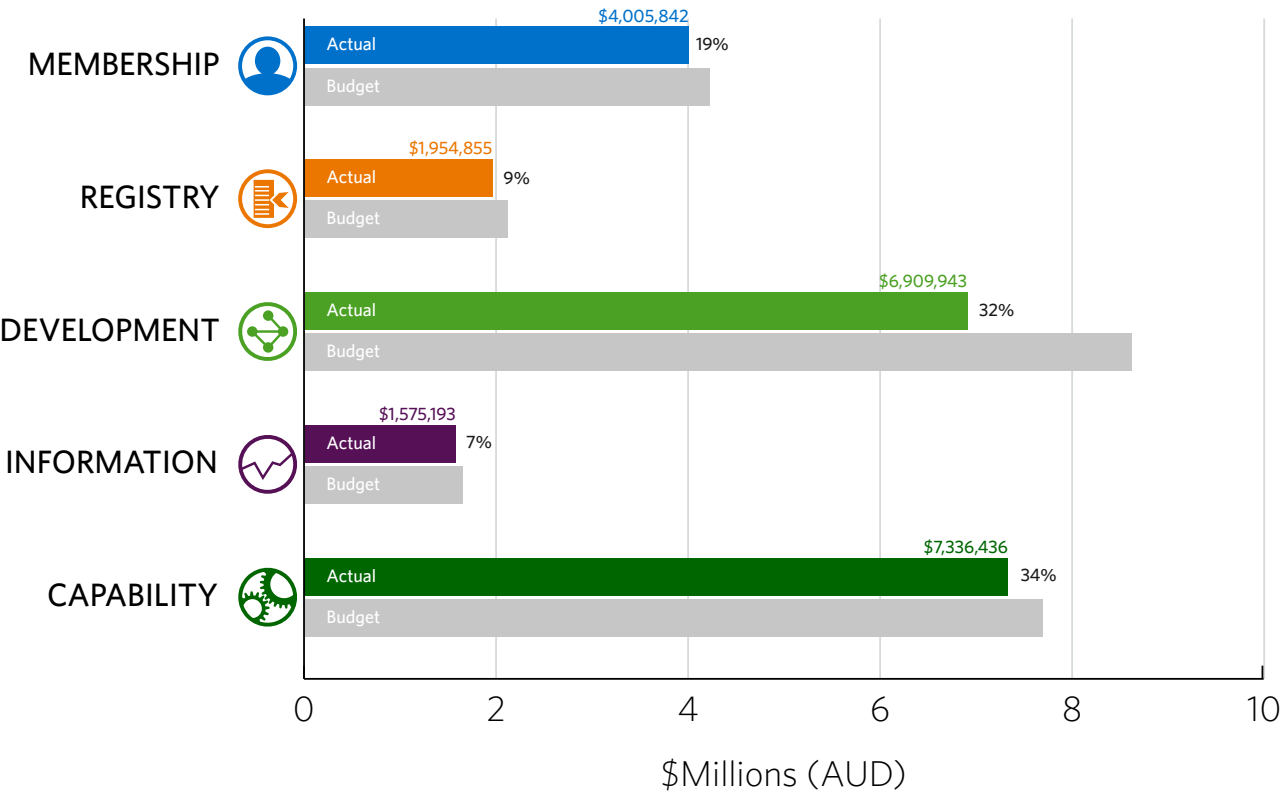
ISO9001 QMS passed

5B.3



Financial Performance Summary

OPERATING EXPENSES BY OUTCOME AREA



Note: Some numbers presented in this chart may not add up precisely due to rounding.

APNIC categorized its expenses under the five pillars and 18 workstreams detailed on page x.

The chart on this page illustrates 2020's actual operating expenses compared to the budget in the 2020 Activity Plan. The percentage for each area indicates the proportion of the total budget it represents.

For more details on APNIC's 2020 finances, please refer to pages 87-90 to view:

- Financial Report by Activity
- Statement of Financial Position
- Statement of Income
- Cash Flow Statement



Notes on the Activities

APNIC’s activities are reported in this document under the 18 workstreams and five pillars described in the previous section:



Membership



Registry



Development



Information

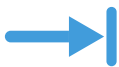


Capability

The activities are described as either ‘Operations’ or ‘Investments’.



‘Operations’ includes all ongoing activities required for continued provision of APNIC services.



‘Investments’ are discrete project activities that result in new products, services, or improvements to APNIC services.

A table summarizes the resources (financial and human) needed to successfully complete the operations and investments in each workstream.

All monetary figures quoted are in Australian Dollars (AUD).

| | Budget | Actual |
|------------|--------------|--------------|
| 1 FTE | 47.40 | 49.28 |
| 2 Expenses | \$11,515,420 | \$11,268,017 |
| 3 CAPEX | \$483,411 | \$354,567 |

- 1 **FTE:** The number of Full-Time Equivalent employees required for the activity. In all cases FTE figures comprise contributions from multiple employees. For example – an FTE of 1.6 may be made up of four employees who each contribute 40% of their time (0.4 FTE), for a period of one year.
- 2 **Expenses:** Refers to all operational costs directly incurred by the activity (in AUD).
- 3 **CAPEX:** Provides the provision for capital expenditure required by the activity (in AUD).



1. MEMBERSHIP



OBJECTIVES

- Deliver world-class products and services required by APNIC Members.
- Engage with Members in building a global, open, stable and secure Internet.
- Ensure accountable governance of APNIC as a membership organization.

WORKSTREAMS

- 1A. Member Services
- 1B. Membership Products
- 1C. Membership Reporting

MEMBERSHIP - SUMMARY

| | Budget | Actual |
|----------|-------------|-------------|
| FTE | 17.55 | 17.91 |
| Expenses | \$4,222,796 | \$4,005,842 |
| CAPEX | - | - |

1A Member Services

OPERATIONS

1. Member services

The Member Services team handled 11,947 tickets created by Member and community enquiries, 2,362 voice calls (phone and skype), and 3,479 online chat sessions. In addition, more than 9,966 Member invoices and receipts were processed.

The APNIC Helpdesk maintained its standing commitment to respond to Member queries within two business days.

Helpdesk service satisfaction remained high with 92.3% of respondents providing 'excellent' and 'above average' scores, and 4.5% 'below average' and 'poor' scores. All negative feedback is actively resolved by Member Services staff.

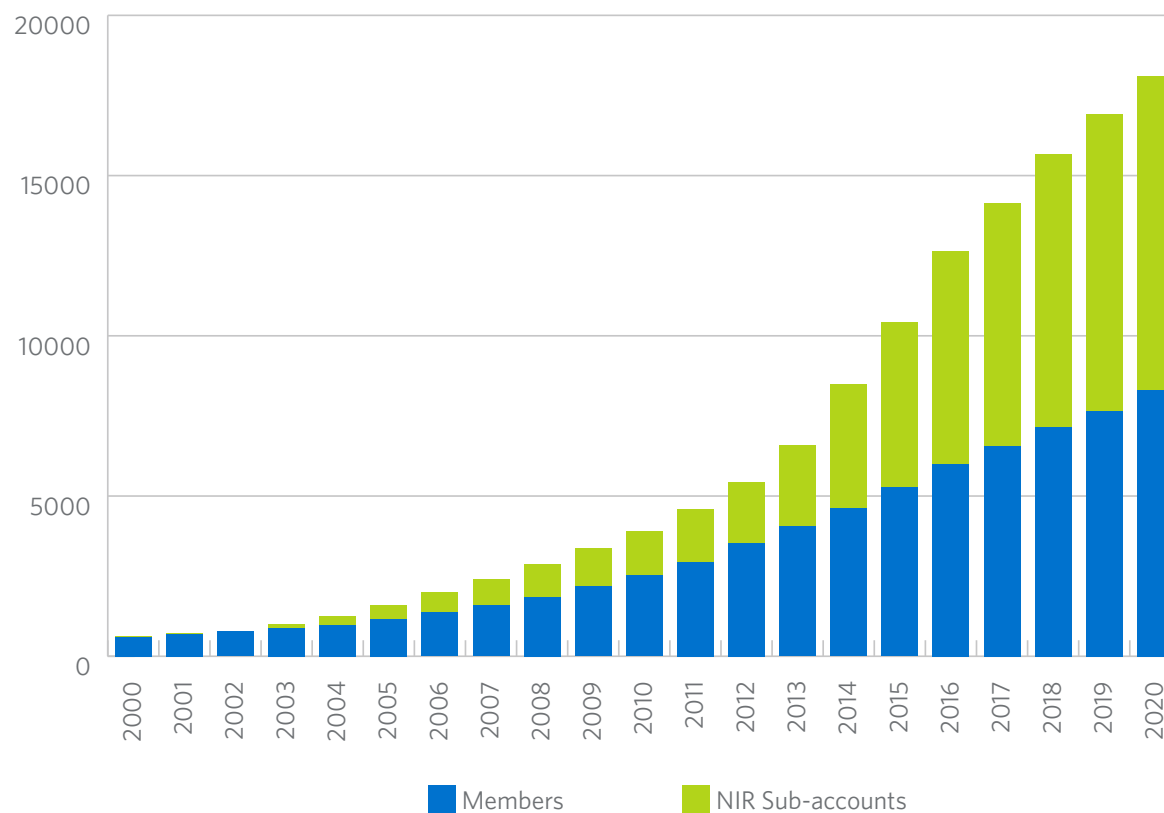
Twenty-six cases of attempted fraud in new Member applications were detected and prevented.

RESOURCING

| | Budget | Actual |
|----------|-------------|-------------|
| FTE | 9.80 | 9.35 |
| Expenses | \$2,461,269 | \$2,301,059 |
| CAPEX | - | - |

Member Services – continued

MEMBERSHIP GROWTH



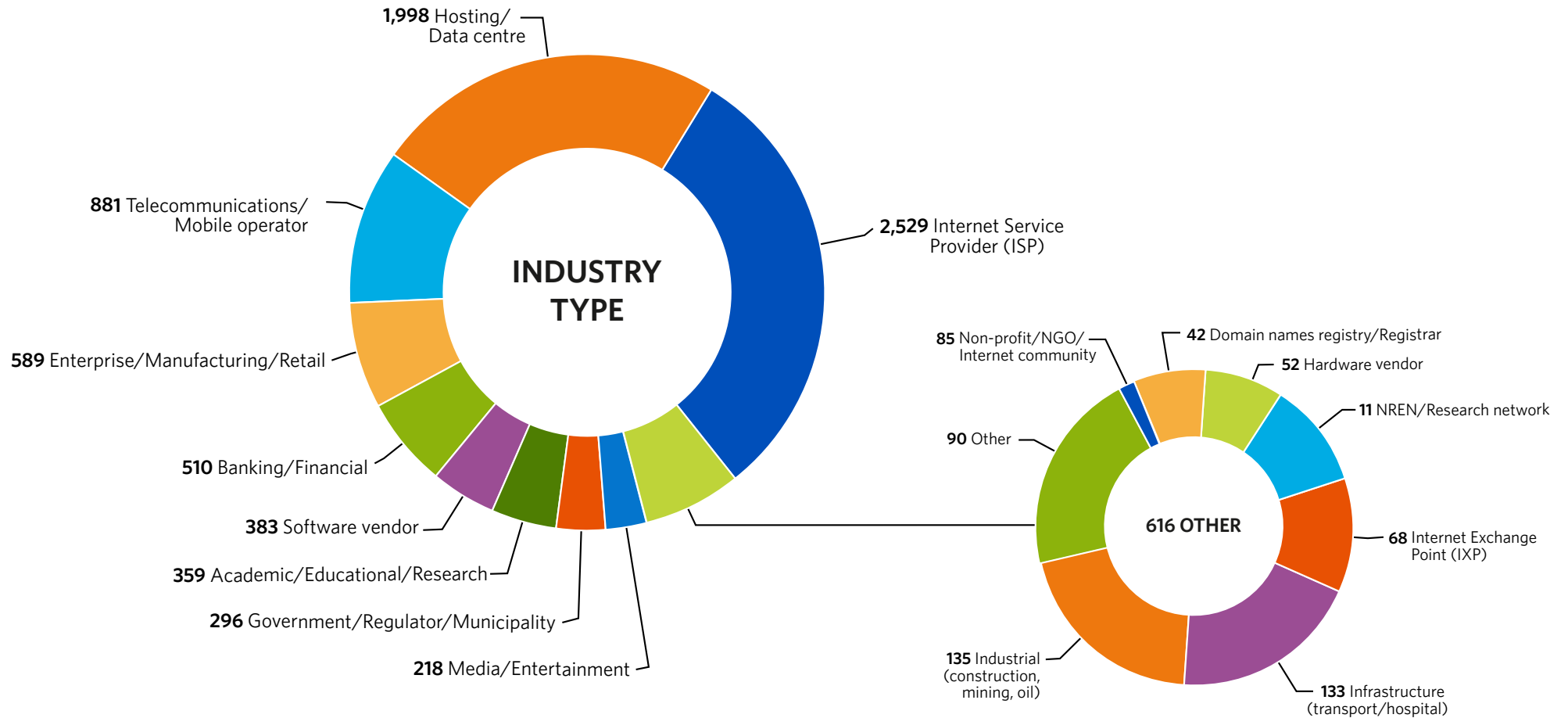
At the end of 2020, APNIC direct membership stood at 8,341, an increase of 7.3% on 2019. In addition, there were 9,972 NIR sub-accounts, after growth of 9.4% in 2020.

Total combined membership was 18,313.



Member Services – continued

MEMBERSHIP INDUSTRY TYPE



The Membership Industry Type statistics include both Members and Non-Member accounts.



1A Member Services – continued

OPERATIONS

2. Member experience

A monthly review of Member feedback on APNIC products and services across all channels was established. An independent third-party audit on the accessibility of APNIC websites was also completed.

3. Membership development

New Member outreach was conducted at APRICOT 2020 and at NOGs including SANOG 35, JANOG 45 and MMIX and MMNOG Forum 2020. APNIC also participated in the first fully online ConnecTechAsia 2020.

The total number of new Members joining APNIC in 2020 was 827.

4. APNIC Survey

The 11th APNIC Survey was conducted from 13 to 31 July 2020. The survey questionnaire was developed following remote interviews with 41 Members and stakeholders across 24 economies (including all seven National Internet Registries (NIRs)). Both the survey and remote interviews were conducted by independent researcher, Survey Matters.

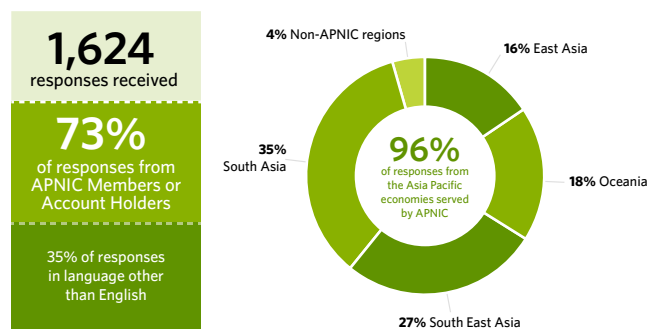
Survey participation increased by 31% compared to 2018, with 1,624 responses; and 35% of respondents used the translated versions (available in 16 languages). The final results were reported at APNIC 50.

A snapshot of the survey results is included on the following page.

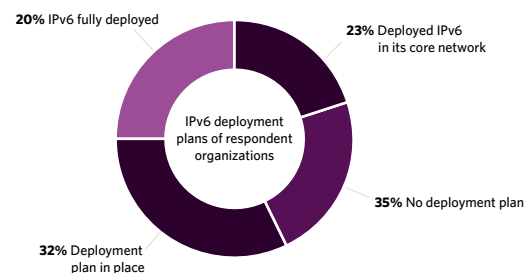
1A Member Services – continued

APNIC SURVEY SNAPSHOT

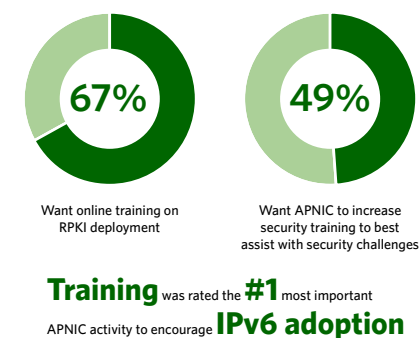
RESPONSE FIGURES



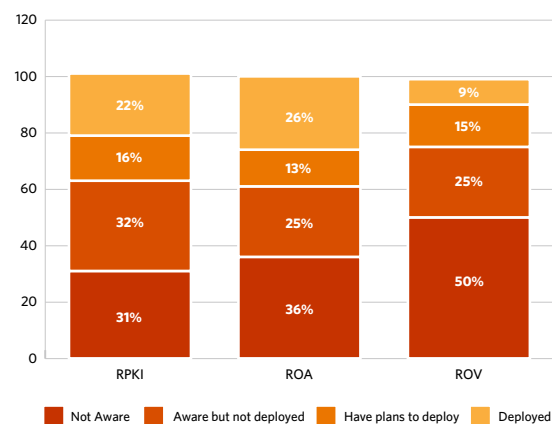
IPv6 DEPLOYMENT



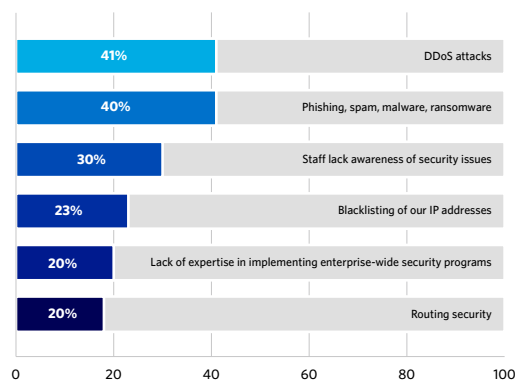
TRAINING



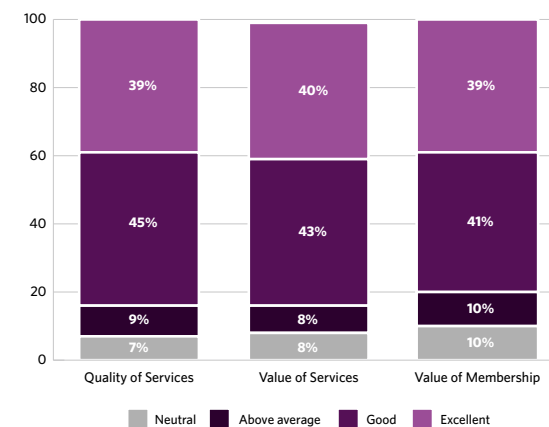
ROUTING SECURITY DEPLOYMENT



SECURITY CHALLENGES



MEMBER SATISFACTION



1A Member Services – continued

SUCCESS MEASURES – 1A

| | Results | Status |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|--------|
| Targets | | |
| Maintain helpdesk SLA of 48-hour business day response to enquiries | 99.98% achieved | ✓ |
| Maintain service satisfaction ratings of at least 92% “excellent and above average” feedback, and less than 5% “poor and below average” feedback | 92.3% excellent and above average 4.5% poor and below average | ✓ |
| Total number of Members at end of 2020 to match or exceed the 2020 budget assumption of 8,262 | 8,341 Members | ✓ |
| Member outreach activities in 90% of economies with APNIC Members | 90% economies covered | ✓ |
| Baseline measurement of membership data currency and accuracy established | Completed | ✓ |
| Successful completion of the APNIC Survey 2020, with at least 10% more respondents | Completed | ✓ |
| APNIC Survey follow-up actions monitoring page updated | Completed | ✓ |



1B Membership Products

OPERATIONS

1. Membership product management

A new MyAPNIC dashboard for APNIC tools, services and activities was released in February, with access authentication to MyAPNIC migrated to the 'APNIC Login' Single Sign On (SSO).

APNIC completed the implementation of Incident Response Team (IRT) email validation for prop-125, which requires all Members to validate their IRT email every six months. An 'abuse-c' attribute was reinstated to every parent resource object and will reference the IRT object via a newly created 'Role' object.

The prop-125 deployment also included an alternative validation method for IRT objects and changes to the validation cycle (for revalidation every six months) following Member feedback.

Improvements to the membership application form were launched in June, with a 30% decrease in correspondence required to process a new application, and a 70% decrease in fake applications, compared with the same period in 2019. New features added to the form included the ability to add a trading name.

Other system improvements included a new internal API to allow Member data to be shared between authenticated internal applications, and full automation of transfer invoicing.

RESOURCING

| | Budget | Actual |
|----------|-------------|-------------|
| FTE | 7.15 | 7.45 |
| Expenses | \$1,127,922 | \$1,256,789 |
| CAPEX | - | - |



1B Membership Products – continued

SUCCESS MEASURES – 1B

| | Results | Status |
|------------------------------------------------------------------------------------------------|-----------|--------|
| Targets | | |
| Creation of baseline metrics, segmentation and categorization of RT tickets | Completed | ✓ |
| Identification and analysis of online features with high latency; issues solved where possible | Completed | ✓ |
| Create a baseline measurement of “mean time to deploy” | Completed | ✓ |

1B Membership Products – continued

INVESTMENTS

2. Online community platform →

APNIC Academy and training attendees were selected as an initial use case audience to develop a prototype online participation platform for community members to share knowledge and experience. User needs will be validated before the prototype is completed in 2021.

A Help Centre platform, providing FAQs and other product and service information, was developed for a 2021 launch.

3. Election system →

Following a trial with 73 community participants, BigPulse was implemented and integrated into MyAPNIC ahead of the EC election at APNIC 49 in February 2020 (replacing the previous in-house online election system).

All EC election voting, including proxy appointment, was completed online by 913 participants without any paper forms required. The total votes received in this election (13,063) was the highest on record.

Online voting was also successfully conducted on the BigPulse platform for the NRO NC election at APNIC 50.

| 2020 Investment | Member Benefit |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Online community platform | Network operators can learn from each other's experience and save time researching multiple sources Allows network operators to find answers |
| Status: Ongoing | |

| | |
|--------------------------|-------------------------------------------------------------------------------------------------------------|
| Election system | Improved user experience for voting and elections Improved trust and auditability of APNIC elections |
| Status: Completed | |

1C Membership Reporting

OPERATIONS

1. Planning and reporting

The 2020-2023 Strategic Plan, 2020 Activity Plan and Budget, and 2019 Annual Report were presented at the 2020 Annual General Meeting in February. The 2020 Budget was revised due to the impacts to the COVID-19 pandemic and was reviewed monthly during 2020.

Event Wraps (all but two) were published in line with the KPI.

The 2021 Activity Plan and Budget was approved by the EC in December 2020.

RESOURCING

| | Budget | Actual |
|----------|-----------|---------|
| FTE | 0.60 | 1.11 |
| Expenses | \$633,245 | 447,994 |
| CAPEX | - | - |

1C Membership Reporting – continued

SUCCESS MEASURES – 1C

| | Results | Status |
|-------------------------------------------------------------------------------|----------------------------------|--------|
| Targets | | |
| On-time publishing of required reports at the APNIC AGM and at APNIC 50 | Completed | ✓ |
| Publishing of EC Minutes within two months of each EC meeting | Completed | ✓ |
| Event Wraps published for 100% of reportable events within one month of event | 65/67 published within one month | ✗ |



2. REGISTRY



OBJECTIVES

Develop and deliver world class registry products and services required by the community.
Ensure responsible stewardship of Internet number resources and deliver accurate registry services.

WORKSTREAMS

- 2A. Registration Services
- 2B. Registry Products
- 2C. Policy Development

REGISTRY - SUMMARY

| | Budget | Actual |
|----------|-------------|-------------|
| FTE | 9.85 | 10.60 |
| Expenses | \$2,111,516 | \$1,954,855 |
| CAPEX | - | - |

2A Registration Services

OPERATIONS

1. IPv4, IPv6 and ASN delegation and registration services

APNIC processed 1,467 IPv6 delegations, 2,005 IPv4 delegations, 1,132 ASN assignments, 523 IPv4 market transfers (424 within the Asia Pacific region and 99 between APNIC and other RIR regions), and 156 Merger and Acquisition IPv4 transfers. The proportion of APNIC Members that now hold IPv6 resources is 66.32%, an increase of 5.6% on the previous year.

APNIC received two blocks of ASNs from IANA (2,048 ASNs) in October. No additional IPv4 or IPv6 allocations were received from IANA in 2020.

At the end of 2020, APNIC had allocated 99.21% of its total IPv4 number resource pool (leaving 0.79% available), 8.2% of its IPv6 pool (leaving 91.8%) and 96.41% of its ASN pool (leaving 3.59%). The size of the available IPv4 pool increased in 2020 following IPv4 reclamation work (see 2A.4).

The status of APNIC's Internet number resource pools at the end of 2020 is below.

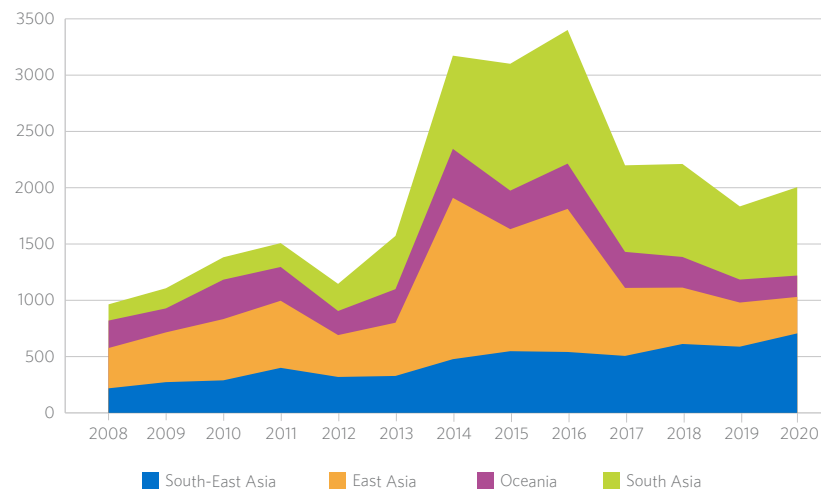
| | Total at 1 Jan 2020 | From IANA | Transfers in | Transfers out | Total at 31 Dec 2020 | Total delegated | Total reserved | Total available |
|--------------------|------------------------|--------------|-----------------|------------------|----------------------------|--------------------|-------------------|--------------------|
| IPv4 (/24s) | 3,479,169 | 0 | 4,240 | 792 | 3,482,617 | 3,451,972 | 14,994 | 15,651 |
| IPv6 (/32s) | 1,067,008 | 0 | 0 | 0 | 1,067,008 | 87,574 | 125,887 | 853,547 |
| ASNs | 19,094 | 2,048 | 2 | 1 | 21,143 | 18,409 | 0 | 2,734 |

RESOURCING

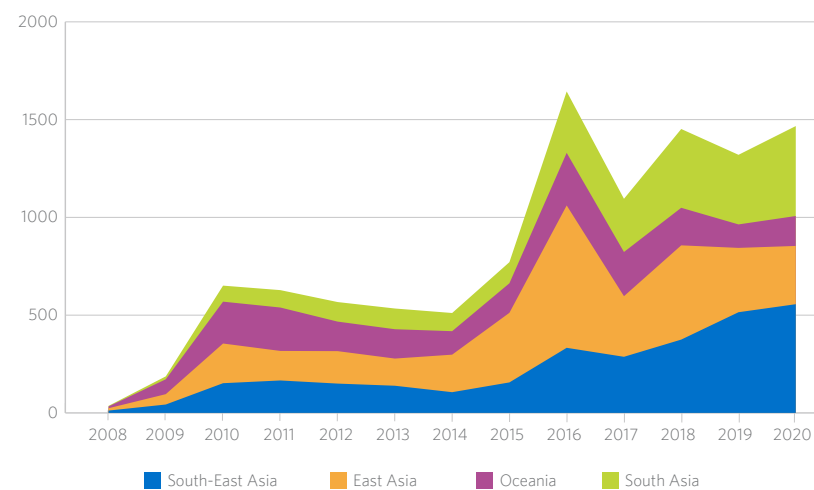
| | Budget | Actual |
|----------|-----------|-----------|
| FTE | 3.70 | 4.78 |
| Expenses | \$645,389 | \$664,335 |
| CAPEX | - | - |

2A Registration Services – continued

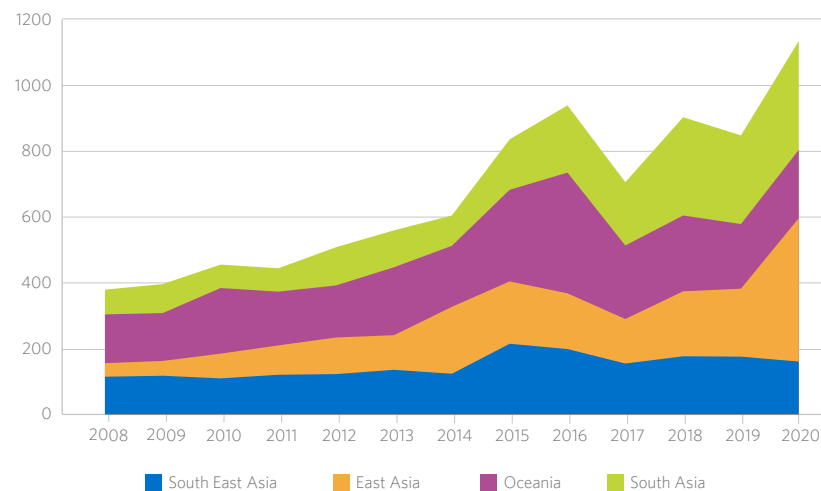
IPv4 DELEGATIONS



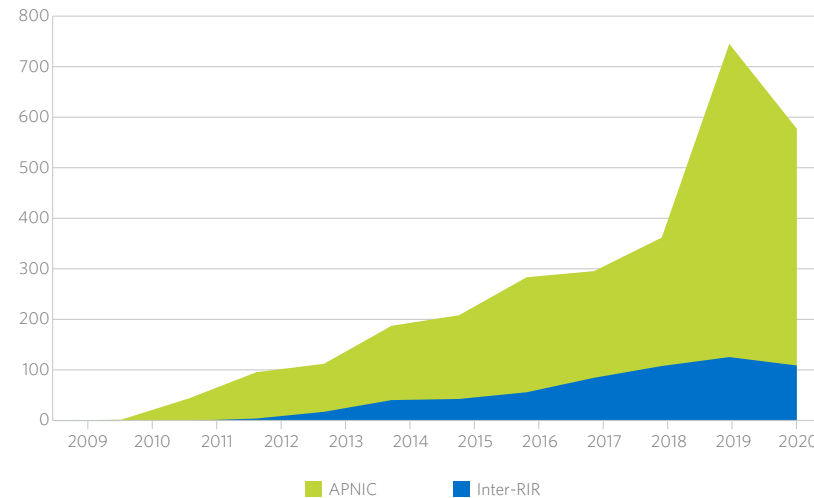
IPv6 DELEGATIONS



ASN ASSIGNMENTS

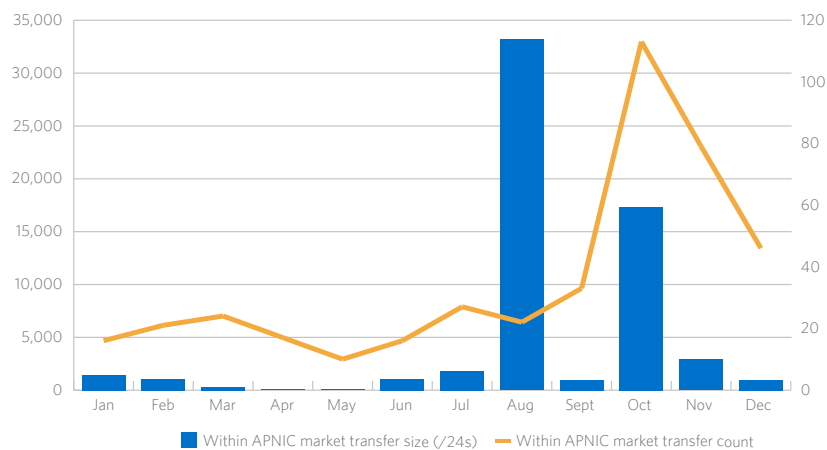


IPv4 MARKET TRANSFERS

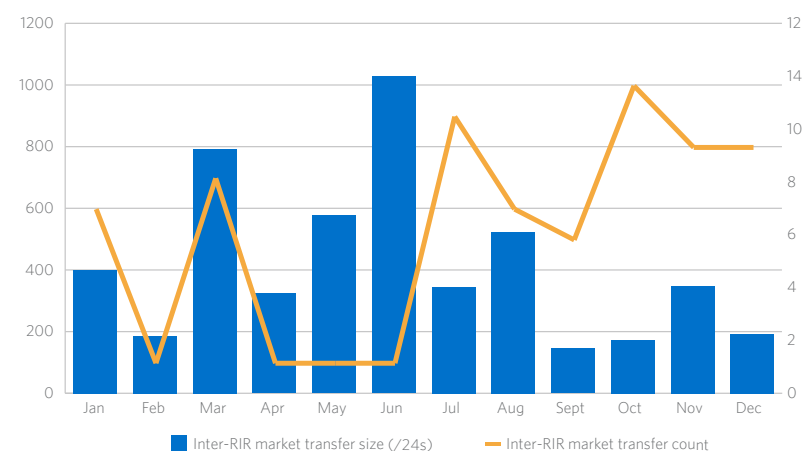


2A Registration Services – continued

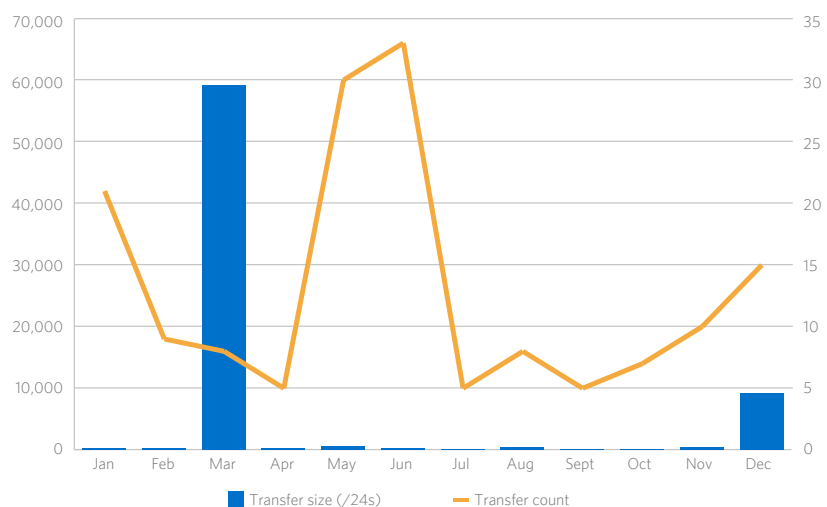
MARKET TRANSFERS



INTER-RIR TRANSFERS



M&A AND HISTORICAL TRANSFERS



The creation of the Asia Pacific Internet Development Trust (APIDT) and its associated IPv4 transfers are visible.

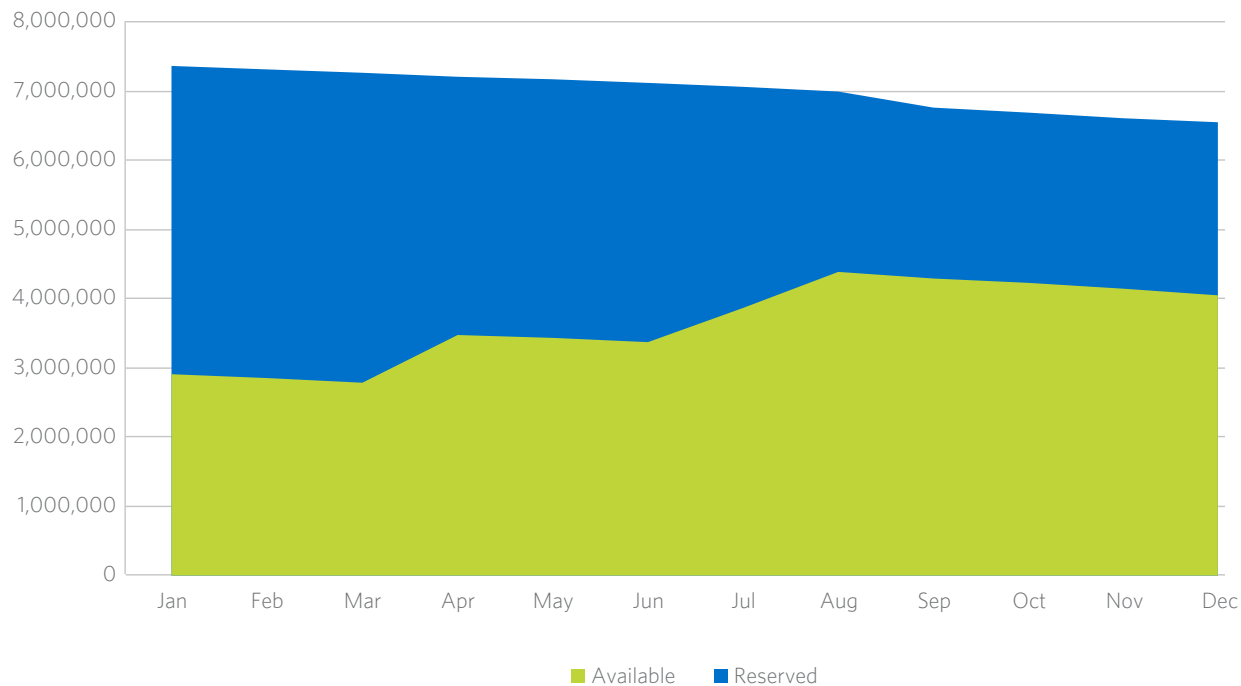
- A single large historical resource transfer (/9 + /10 + /11) was completed in March to APIDT.
- A /9 was transferred in August, and a /10 in October, both from APIDT.

No large inter-RIR market transfers occurred during 2020.



2A Registration Services – continued

AVAILABLE IPV4 ADDRESS SPACE



APNIC's 'last /8' block of IPv4 address space (103.0.0.0/8) was delegated by IANA to APNIC on 3 February 2011. On 15 April 2011, delegations began from this block of addresses under the terms of prop-062, which restricted existing and new Members to requesting a maximum of a /22.

Prop-116 came into force in 2017, restricting last /8 address space from being transferred for five years after its initial delegation. This resulted in a significant drop in the delegation rate.

In February 2019, prop-127 reduced the maximum delegation size to a /23, further reducing consumption.

Around 1.1 million historical IPv4 addresses were voluntarily returned to the available pool in 2020 as a result of APNIC's IPv4 reclamation efforts.

2A Registration Services – continued

OPERATIONS

2. Resource Quality Check (RQC)

Members can check the ‘quality’ (routing history, transfer history, geolocation, blacklist information) of Internet number resources delegated by APNIC through RQC functionality in the Network Operators ToolbOX (NetOX). Usage measurement was implemented in March 2020 and the RQC page received 1,968 views from March-December, with 960 unique resources queried.

3. Maintain correct and current registry data

All Members now have an organization object associated with their Internet number resources in the APNIC Whois Database. APNIC helped 500 Members to create their organization object.

The NIRs were also assisted with corrections to transfer records and maintaining accuracy of historical Internet number resources.

2A Registration Services – continued

4. Reclaiming unused IPv4 address space

Reclamation work progressed under three categories of unrouted IPv4 space:

- Current address space, delegated under the last /8 policy less than five years ago.
 - Around 370,000 unadvertised IPv4 addresses were identified, held by 604 Members. These Members were contacted and asked to return these addresses if not needed.
- Current address space, including last /8 space delegated more than five years ago.
 - Around 54 million unadvertised IPv4 addresses were identified, held by 1,309 Members. These Members were contacted and asked to either return the resources to APNIC or make them available for transfer.
- Historical address space.
 - Around 2.3 million unadvertised historical IPv4 addresses were identified and efforts to contact the resource custodians commenced in 2020. If the custodians cannot be contacted, the resources will be marked for recovery in 2021.
 - Around 1.1 million IPv4 addresses were voluntarily returned to the available pool following APNIC contact.

A new service was implemented to allow APNIC Members to list IPv4 address space available for market transfer.

2A Registration Services – continued

SUCCESS MEASURES – 2A

| | Results | Status |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|--------|
| Targets | | |
| Maintain Helpdesk SLA of 48-hour business day response to enquiries | 99.98% achieved | ✓ |
| Maintain service satisfaction ratings of at least 92% “excellent and above average” feedback and less than 5% “poor and below average” feedback | 92.3% excellent and above average 4.5% poor and below average | ✓ |
| Percentage of Members holding IPv6 address space increased to 65% | 66.32% | ✓ |
| Measurement system for APNIC RQC service implemented | Completed | ✓ |
| A method to measure whois contact accuracy and currency established | Completed | ✓ |
| Attempt contact with all (2,800+) identified resource holders with potentially unused IPv4 addresses, to offer options for return or transfer of resources | Completed | ✓ |

2B Registry Products

OPERATIONS

1. Internet number resource management

The APNIC Registry Management System (ARMS) was updated to support the following:

- Return of terminated Internet number resources for subsequent redelegation
- Audited correction of errors in historical resource records
- Transfer restrictions of IPv4 addresses in 103/8 to meet the requirements of prop-116

2. Registry product management

RDAP (Registration Data Access Protocol) was successfully deployed to the cloud, resulting in significant reduction of round-trip times (RTT) and availability improvement.

RPKI resilience was improved with the adoption of Cloudflare 'Spectrum' and Google Cloud for delivery of the RPKI Repository Delta Protocol (RRDP) and RSYNC service in ASO. It will be deployed in 2021 to the main RPKI service.

A review of the Resource Public Key Infrastructure (RPKI) Certification Practice Statement began, for completion in 2021. The work was shared with the RIPE NCC as part of RIR cooperation on RPKI resilience.

VNNIC was assisted with the deployment of a new registry system to improve data alignment with APNIC. Sixteen meetings (face-to-face at APNIC 49, and online) were also held with NIRs during the year on registry product services.

RESOURCING

| | Budget | Actual |
|----------|-----------|-----------|
| FTE | 5.30 | 5.11 |
| Expenses | \$825,807 | \$909,329 |
| CAPEX | - | - |

2B Registry Products – continued

SUCCESS MEASURES – 2B

| | Results | Status |
|----------------------------------------------------------------------------------------|----------------------------|--------|
| Targets | | |
| Successful implementation of pool service changes for historical record amendment | Completed | ✓ |
| Seven product development engagements at APNIC conferences | 16 engagements completed | ✓ |
| RDAP service deployed to the cloud in two regions | Deployed to three regions | ✓ |
| Fifteen user experience interviews for registry products and APRICOT and IETF meetings | 13/15 interviews completed | ✗ |
| RPKI Certification Practice Statement review completed | 2021 scheduled completion | ✗ |

2B Registry Products – continued

INVESTMENTS

3. RPKI ASO ROA →

A public testbed of the ASO ROA (according to prop-132) was deployed for APNIC 49 and the production service was deployed before APNIC 50.

APNIC has continued to liaise with the RIRs where ASO ROA proposals are under discussion.

Additional investments

APNIC provided funding to OpenBSD to implement RRDP in its codebase. This implementation was completed in 2020 and will be released in 2021.

APNIC became an annual bronze supporter for NLnet, supporting development of RPKI ‘Krill’ (Certificate Authority) and ‘Routinator’ for Relying Parties. APNIC also provided funding for NLnet to implement Resource Tagged Attestations (RTA), which was released in late 2020.

| 2020 Investment | Member Benefit |
|--------------------------|---------------------------------------------------------------------------------------|
| RPKI ASO ROA | Implementation of agreed mechanism to help avoid address hijacking and other ‘bogons’ |
| Status: Completed | |

2C Policy Development

OPERATIONS

1 Policy development

The APNIC Policy SIG considered the following proposals in 2020.

| Proposal | Result |
|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| prop-130: Modification of transfer policies | Presented at APNIC 49. Did not reach consensus and returned to mailing list for further discussion. Discussion at APNIC 50 deferred at request of proposal's author. |
| prop-133: Clarification on Sub-Assignments | Presented at APNIC 49. Did not reach consensus and returned to mailing list for further discussion. Discussion at APNIC 50 deferred at request of proposal's author. |
| Prop-134: PDP Update | Presented at APNIC 49. Did not reach consensus and withdrawn by author. |

At APNIC 49, Ching-Heng Ku and Bertrand Cherrier were re-elected as Policy SIG Co-Chairs. Following his election to the APNIC Executive Council (EC), Sumon Ahmed Sabir resigned as Policy SIG Chair, and was replaced by Bertrand Cherrier as Acting Chair.

2. Policy implementation

Implementation of prop-125: 'Validation of "abuse-mailbox" and other IRT emails' and prop-132: 'RPKI ROAs for unallocated and unassigned APNIC address space' was completed as planned. More information is available in sections 1B.1 and 2B.3.

3. Policy analysis

Impact assessments for the three policy proposals discussed at APNIC 49 (prop-130, prop-133 and prop-134) were presented during the meeting. APNIC staff also presented observations on the current experimental allocations policy and on consolidation trends identified in transfers of the last /8 (103/8) address space.

RESOURCING

| | Budget | Actual |
|----------|-----------|-----------|
| FTE | 0.85 | 0.71 |
| Expenses | \$640,320 | \$381,191 |
| CAPEX | - | - |

2C Policy Development – continued

SUCCESS MEASURES – 2C

| | Results | Status |
|-----------------------------------------------------------------------------------------------------|-----------------|--------|
| Targets | | |
| Two Policy SIG meetings held | Completed | ✓ |
| Delivery of two policy analysis presentations at SIG meetings | Completed | ✓ |
| High satisfaction rating from Policy Chairs in annual review of policy support | 5/5 star rating | ✓ |
| Meeting agreed implementation timelines 100% of the time | Completed | ✓ |
| Publishing of a 'policy proposals analysis' before each Policy SIG meeting | Completed | ✓ |
| Achieve a service quality rating of 5.75 or above for Policy Development in the APNIC Survey | 5.98 | ✓ |

2C Policy Development – continued

INVESTMENTS

4. Policy documentation review →

A review of policy documentation was completed and an overview of the report findings was presented at APNIC 50 and shared on the Policy SIG mailing list. A further two-hour community consultation was held online to discuss the findings of the report, with a public editorial review of the findings launched in December 2020.

A meeting of all SIG Chairs (Policy, Cooperation, NIR and Routing Security) to discuss recommended changes to SIG elections in the review report was held in October, with further community discussion scheduled for APNIC 51.

www.apnic.net/policy

| 2020 Investment | Member Benefit |
|------------------------------------|--------------------------------------------------------------------|
| Policy documentation review | Improved policy documentation that is easier to use and understand |
| Status: Ongoing | |



3. DEVELOPMENT



OBJECTIVES

Invest in sustainable development of the regional Internet community, industry and infrastructure.
Build capacity for best-practice Internet operations across the Internet technical community.

WORKSTREAMS

- 3A. APNIC Conferences
- 3B. Foundation Support
- 3C. Community Engagement
- 3D. Community Participation
- 3E. APNIC Academy
- 3F. Infrastructure Support

DEVELOPMENT - SUMMARY

| | Budget | Actual |
|----------|-------------|-------------|
| FTE | 23.55 | 22.06 |
| Expenses | \$8,622,717 | \$6,909,943 |
| CAPEX | \$396,000 | \$42,453 |

3A APNIC Conferences

OPERATIONS

1. APNIC conferences

APRICOT 2020 (incorporating APNIC 51) was held in Melbourne, Australia, from 12 to 21 February 2020. The event welcomed 563 delegates with an additional 2,498 views from remote participants.

APNIC 50 was held wholly online due to the COVID-19 pandemic and welcomed 473 remote attendees (via Zoom) with an additional 4,003 views via YouTube. A simplified conference registration was implemented alongside web platform development and integration of multiple systems to support a 100% online conference experience.

Several community meetings were held at the conferences from partner organizations including FIRST, DotAsia, APIX, APStar, ISOC, and APNG.

With support from JPNIC, an RPKI Deployathon was held at APRICOT 2020 for 40 participants. The APNIC Foundation supported four fellows from IXPs in Bhutan, Nepal, Myanmar and Fiji to attend the event.

The third APNIC Hackathon was also held at APRICOT 2020, attracting 13 participants who worked on three projects under the 'Network Tools' theme.

An election for one available NRO NC position was held at APNIC 50 with Shubham Saran elected to serve a two-year term, beginning 1 January 2021. The APNIC EC subsequently appointed Nicole Chen to the second available NRO NC seat for a one-year term beginning 1 January 2021.

RESOURCING

| | Budget | Actual |
|----------|-------------|-------------|
| FTE | 4.60 | 4.36 |
| Expenses | \$1,405,301 | \$1,082,485 |
| CAPEX | \$1,000 | \$4,174 |



APRICOT 2020

APNIC 50

Onsite participants

| | | |
|----------------------------------------|-----|-----|
| Total number of onsite delegates | 563 | - |
| Economies represented | 60 | 48 |
| APNIC Member organizations represented | 142 | 120 |

Remote participants

| | | |
|------------------------|--------|--------|
| Zoom | 185 | 473 |
| YouTube views | 2,313 | 4,003 |
| YouTube minutes viewed | 29,190 | 43,567 |

conference.apnic.net





3A APNIC Conferences – continued

SUCCESS MEASURES – 3A

| | Results | Status |
|--------------------------------------------------------------------------------------------|-----------------|--------|
| Targets | | |
| Delivery of two conferences (in Oceania and South Asia) | Completed | ✓ |
| Achieve attendance of 1,000 delegates | 1,036 attendees | ✓ |
| Achieve 4,000 remote conference session views | 6,974 views | ✓ |
| Achieve a minimum average conference participant satisfaction survey rating of 90% | 94.8% | ✓ |
| Achieve a service quality rating of 6.0 or above for APNIC Conferences in the APNIC Survey | 6.33 | ✓ |



3A APNIC Conferences – continued

INVESTMENTS

2. Fellowships →

Due to APNIC 50 being held online, travel fellowships were not offered, but will reopen in 2021 for APNIC 52.

| 2020 Investment | Member Benefit |
|-------------------------|------------------------------------------------------------|
| Fellowships | Opportunities for more Members to attend APNIC conferences |
| Status: Deferred | |



3B Foundation Support

INVESTMENTS

1. Operational and administrative support →

In addition to two full-time staff seconded to the Foundation to manage operations and projects, project budgets were used to hire additional administrative support and project coordination positions.

Secretariat staff provided financial, HR and communications support for various projects. Staff also supported the creation of the Asia Pacific Internet Development Trust (APIDT).

2. ISIF Asia contribution →

APNIC provided USD 120,000 to support four Network Operations Research Grants (USD 30,000 each).

Selected projects

| | | |
|-----------------------------------------------------------------------------------------------------------|-------------|-------------------------|
| Open Lawful Intercept for Asia Pacific | New Zealand | University of Waikato |
| IPv6 Deployment at Enterprises | India | IIEsoc |
| Collaborative Honeynet Threat Sharing Platform | Indonesia | Swiss German University |
| Experiment and improve reinforcement learning algorithms to enhance anomalous network behaviour detection | Australia | TeleMARS Pty Ltd |

| 2020 Investment | Member Benefit |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operational and administrative support | A well-run Foundation to deliver increased funding for development projects in the APNIC region |
| Status: Completed | |
| ISIF Asia contribution | Recognition and funding of innovation Internet projects that benefit the community Research projects that help inform Members' decisions around Internet operations |
| Status: Completed | |

RESOURCING

| | Budget | Actual |
|----------|-----------|-----------|
| FTE | 1.15 | 1.41 |
| Expenses | \$865,463 | \$972,229 |
| CAPEX | - | - |

3C Community Engagement

OPERATIONS

1. Technical community support

APNIC participated in 19 Network Operator Group (NOG) events during 2020, providing sponsorship, speakers, trainers, and technical support.

In response to the cancellation of several NOG meetings due to the pandemic, APNIC developed the 'Networking from Home' (NFH) series of four, half-day, online technical events serving 21 NOG communities in four sub-regions.

The four NFH events attracted 1,219 participants from 45 economies, with 91% of attendees from the Asia Pacific. Average watch time for the events was 1hr 40mins (67% of each 2.5hr event). Following the success of the NFH events, APNIC provided technical support and advice to six NOGs to assist them with holding online events.

APNIC helped local volunteers establish the Papua New Guinea Network Operators Group (PNGNOG) as an open, community-led initiative, helping launch its first event, PNGNOG v0.1, in June.

Work continued with local communities in the Maldives to help establish an Internet Exchange Point (IXP), and in Samoa, to re-establish its IXP. Sponsorship was also provided to PeeringDB, IXPDB, Peering Asia and APIX.

Staff participated in NREN activities, including the APAN Technical Committee for APAN 50 and APAN 51, and Co-Chaired the APAN Security WG.



RESOURCING

| | Budget | Actual |
|----------|-------------|-------------|
| FTE | 7.15 | 5.69 |
| Expenses | \$2,493,689 | \$1,776,609 |
| CAPEX | - | - |



3C Community Engagement – continued

2. Security community support

APNIC participated in 35 security engagements and 12 CERT engagements including:

- Organizing FIRST TC tracks at APRICOT 2020 and APNIC 50; moderating conference sessions at the FIRST Cyber Threat Intelligence Summit, the FIRST Regional Symposium Africa and Arab Region Plenary, and the Annual FIRST Conference.
- Training with the CERT/CSIRT community including workshops with the Pakistan Telecom Authority, KrCERT/CC, and BTCIRT. Presentations were made at Sri Lanka CERT Cyber Security Week, CNCERT International Partnership in Emergency Response Conference, and the CSIRT.id Virtual Seminar.
- Presenting at the ITU Global Cyberdrill 2020 webinar on cyber crisis management planning and improving the maturity of national CSIRTs.
- Capacity building work with the law enforcement and public safety community including UCENET and Interpol, the Hong Kong Police Force, Australian Federal Police, and the UN International Narcotics Control Board.
- Engagements in the Pacific region, including presentations and training for the Solomon Islands Government Data Centre, PaCSON, Cyber Safety Pasifika, and the Digital Pacific Conference.

APNIC also sponsored the NZITF Conference, Samoa IT Association Security Seminar, MNSEC 2020, and Shadowserver Foundation, for its data centre relocation and 2020 operations.



3C Community Engagement – continued

3. Internet organization cooperation

APNIC participated in all RIR meetings, ICANN meetings (ICANN 67, 68 and 69), and IETF meetings (IETF 107, 108 and 109). New AFRINIC CEO, Eddy Kayihura, also visited the APNIC offices following APRICOT 2020 for a series of meetings.

Collaboration activities with other RIRs included participation in 38 online meetings with NRO coordination groups, including the Internet Technical Collaboration Group (ITCG), Engineering Coordination Group (ECG), Resource Services Coordination Group (RSCG), Communication Coordination Group (CCG), Public Safety Coordination Group (PSCG) and the NRO EC.

Staff also participated in IANA Numbering Services Review Committee (RC) calls, the joint meeting of the NRO RSCG and Legal Team, the NRO EC virtual retreat, and provided crisis communications training to 10 AFRINIC staff.



3C Community Engagement – continued

4. Internet governance participation

Internet governance-related activities included:

- Organizing three sessions at the Asia Pacific Regional Internet Governance Forum (APrIGF); co-chairing the APrIGF Drafting Committee of the APrIGF Synthesis Document and virtual Townhalls, and participating in the Program and Fellowship Committees.
- Organizing and presenting at several IGF 2020 sessions, and participating in IGF open consultation and the Multistakeholder Advisory Group (MAG) meetings. APNIC staff were appointed to the MAG via the ITCG nomination committee and the IGF Support Association (IGFSA) Executive Committee.
- Participating in economy-level IGFs such as NetThing 2020 (Australia), NetHui 2020 (New Zealand), Hong Kong IGF 2020, China IGF 2020, Youth IGF India, bdIGF 2020, and TWIGF.
- Presenting and sponsoring Schools of Internet Governance (SIG), including PKSIG, inSIG, BDSIG, and APSIG.
- Authoring the chapter 'Putting the technical community back into cyber (policy)' of the Routledge Handbook of International Cybersecurity.



3C Community Engagement – continued

5. Government engagement

APNIC engages with governments and inter-governmental organizations as a member of the technical community. APNIC offered technical perspectives on cybersecurity, Internet operations and IPv6 deployment at several events including:

- APECTEL 61 and APEC Security and Prosperity Working Group (SPSG) meetings
- ITU Global Symposium for Regulators 2020
- UN High Level Political Forum 2020
- Global Cyberdrill 2020
- ITU Regional Development Forum for Asia and the Pacific 2020.
- 2020 Global Cybersecurity Capacity Building Conference and GFCE Pacific Regional Meeting in Melbourne, and GFCE Annual Meeting 2020
- Meeting with Cambodia's Secretary of State from the Ministry of Posts and Telecommunications
- Meetings with the new Director of the ITU's Regional Office for Asia and the Pacific, and with the Secretary General of APT.

Discussions relating to the Internet numbers community were monitored at events including:

- Regional preparatory meetings for the ITU's WTSa 2020 and the 2021 WTDC
- 17th APT Telecommunication/ICT Development Forum (ADF-17)
- 20th APT Policy and Regulatory Forum (PRF-20)
- ITU World Telecommunication/ICT Policy Forum (WTPF)
- ITU Telecommunication Development Advisory Group (TDAG)
- ITU-T Study Groups 11 & 13



3C Community Engagement – continued

SUCCESS MEASURES – 3C

| | Results | Status |
|---------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------|
| Targets | | |
| Sponsor or participate in 30 technical community events including NOGs, Peering Forums and Research & Education community events | 34 events | ✓ |
| Facilitate and support two new/revived NOGs | One new NOG | ✗ |
| Sponsor or participate in 10 security community events | 23 events | ✓ |
| Support targeted development of three new/existing CERTs/CSIRTs | 5 CERTs/CSIRTs | ✓ |
| Ensure APNIC participation in each of the RIR meetings | Completed | ✓ |
| Provide APriIGF sponsorship and participate in APriIGF and IGF with workshop proposals, MSG/MAG participation, and speaking roles | Completed | ✓ |
| Participate in at least three national Internet governance initiatives | 7 engagements | ✓ |
| Provide sponsorship/speaker support to at least two schools of Internet governance | 4 engagements | ✓ |
| At least 12 engagements with governments and intergovernmental organizations, including capacity-building partnerships | 37 engagements | ✓ |
| At least six engagements with the Public Safety community | 11 engagements | ✓ |

3D Community Participation

OPERATIONS

1. Community-led processes

Promotion of SIG meetings at APRICOT 2020 and APNIC 50 included email bulletins, social media promotion and blog posts.

At APNIC 49, 242 people participated in SIG meetings, and 391 joined online. At APNIC 50, 396 people participated in SIG meetings online. An additional 25 people joined the Policy SIG Chairs' online community consultation for the PDP review report in October.

Summaries of policies being discussed at APNIC 49, and the results, were published in eight languages.

The first meeting of the new Routing Security SIG was held at APNIC 49, and the SIG's charter agreed. Aftab Siddiqui was elected as Chair. There were four presentations at the Routing Security SIG at APNIC 50, including updates from the IETF SIDROPS Working Group and an ASO implementation report from APNIC.

The scheduled IANA Numbering Services Review Committee (IANA RC) election for 2020 was deferred by the EC and the term of the current community-elected member, Bertrand Cherrier (Micro Logic Systems, New Caledonia), extended until 31 December 2021.

Satoru Tsurumaki was appointed by the EC to the IANA RC for a two-year term from 1 January 2021 to 31 December 2022.

RESOURCING

| | Budget | Actual |
|----------|-----------|-----------|
| FTE | 1.10 | 0.56 |
| Expenses | \$203,283 | \$194,046 |
| CAPEX | - | - |

3D Community Participation – continued

2. Online participation

Visitor numbers to apnic.net have steadily increased since April, while time on site has decreased over the same period. The top five visitor economies were the United States, India, China, Japan and Australia. Twenty-six percent of visitors used a mobile device to access apnic.net.

Social media promotion and blog posts helped attract 2,548 attendees to 18 APNIC Academy webinars, with 687 new users registering as a direct result.

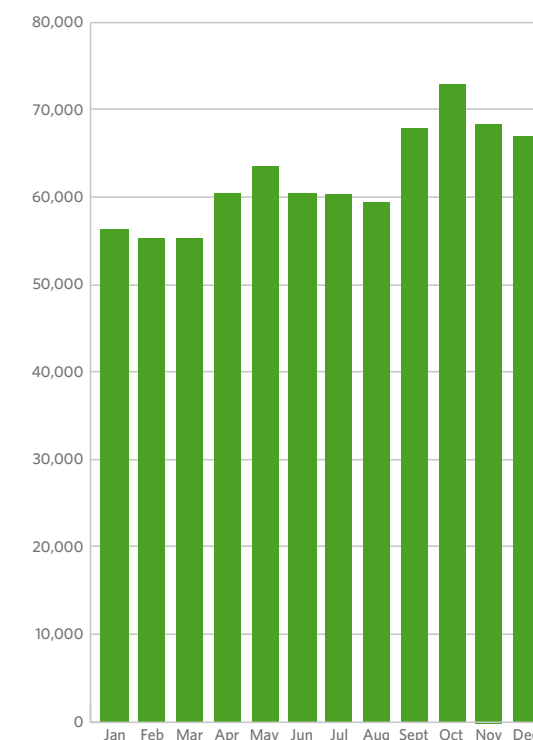
Three live, 45-minute 'APNIC Academy Socials' were hosted on Facebook with guests from NTT, Reliance Jio, Virgin Media, Google, ACT Fibrenet, ISOC and APNIC technical staff. The video posts reached 120,720 people for a total of 22,952 minutes viewed, and 1,614 post engagements.

Community engagement with APNIC Social Media continued to grow:

| | | 2019 | 2020 | % change |
|------------|------------|-----------|-----------|----------|
| Facebook | Reach | 2,275,361 | 3,386,566 | 49% |
| | Likes | 29,241 | 30,365 | 4% |
| Twitter | Followers | 10,882 | 12,215 | 12% |
| | Engagement | 46,696 | 63,749 | 37% |
| YouTube | Views | 39,555 | 43,198 | 9% |
| | Hours | 4,503 | 4,705 | 5% |
| Slideshare | Views | 155,696 | 157,398 | 1% |
| LinkedIn | Followers | 4,286 | 5,411 | 26% |

The communication work for the Networking From Home project was recognized as a finalist in three Asia Pacific SABRE Award categories, winning a Certificate of Excellence for branding and design.

WEBSITE VIEWS





3D Community Participation – continued

3 Encouraging newcomers

NextGen BoFs were held at APRICOT 2020 and APNIC 50 (following the first NextGen BoF at APNIC 48 in 2019). While attendance was disappointing at APRICOT 2020, the NextGen BoF at APNIC 50 was a success, with 63 attendees hearing career advice from the heads of the five RIRs.

Sixty percent of APRICOT attendees (336) and 36% of APNIC 50 attendees (169) were newcomers.

APNIC attracted 236 new blog subscribers, 1,333 new Twitter followers, 1,125 new LinkedIn followers, and 1,124 new people liked APNIC's Facebook page.



3D Community Participation – continued

SUCCESS MEASURES – 3D

| | Results | Status |
|-----------------------------------------------------------|---------------------|--------|
| Targets | | |
| Attract 300 in-person participants at SIG sessions | 242 participants | ✗ |
| Achieve 800 online SIG participants | 812 participants | ✓ |
| Reach 1,250 subscribers to SIG mailing lists | 1,268 subscribers | ✓ |
| Reach 2.4 million blog views (all time) | 2,638,935 views | ✓ |
| Achieve 4,000 remote conference session views | 6,974 views | ✓ |
| Achieve attendance of 1,000 conference delegates | 1,036 attendees | ✓ |
| Reach 11,900 Twitter followers | 12,215 followers | ✓ |
| Achieve Facebook reach of 2 million | 3,386,566 reach | ✓ |
| Attract 350 newcomers to APNIC conferences | 505 newcomers | ✓ |
| Attract 75 new blog email subscribers | 236 new subscribers | ✓ |



3D Community Participation – continued

INVESTMENTS

4. Community diversity →

A new Community Demographics page containing gender, English language proficiency, age and disability statistics was published on the apnic.net website and will be updated quarterly.

APNIC also completed a review of translation strategies for apnic.net.

www.apnic.net/community/community-demographics

| 2020 Investment | Member Benefit |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Community diversity | Understanding of the diversity of participants in the APNIC community Greater diversity of community participation in APNIC activities |
| Status: Completed | |



3E APNIC Academy

OPERATIONS

1. Curriculum development

Two new courses — Network Management and Monitoring, and Network Automation — were developed with subject matter experts, in response to workshop feedback and industry trends. The online self-paced Routing Basics course was also redeveloped. These courses are due for release in early 2021.

Two new virtual labs for instructor-led training were developed (464XLAT and BGP Operations and Security Best Practices) and one new lab was updated for instructor-led training (IPSec). New labs were also added to the APNIC Academy in OSPF, IS-IS, BGP, IPSec and Segment Routing.

2. Face-to-Face training

Due to the COVID-19 pandemic, the training delivery team was only able to provide face-to-face training in January and February.

APNIC held 10 face-to-face training sessions for 244 participants in seven locations around the region.

RESOURCING

| | Budget | Actual |
|----------|-------------|-------------|
| FTE | 8.45 | 9.10 |
| Expenses | \$2,330,523 | \$1,875,366 |
| CAPEX | - | \$20,991 |



3E APNIC Academy – continued

3. Online training

From March 2020, training delivery focused on live online training. A program of live online tutorials, in three different time zones was established (East Asia/South East Asia, South Asia, Oceania), focusing on RPKI, Network Security, DNS/DNSSEC, Advanced Routing (with Multihoming and ROV), IPv6 Deployment, and Segment Routing.

Live online training was also provided at 16 events, including PacNOG 26 and 27, PhNOG Virtual 2020, APAN 50, bdNOG 12, MMIX/MMNOG and LKNOG 4. APNIC delivered 46 live courses for 2,434 participants in total.

The APNIC Academy reached 11,610 registered users (8,216 active), who launched 4,946 virtual labs, completed 2,817 hours of self-paced training, and received 2,519 certificates.

In addition, the Academy hosted 18 live webinars, attracting 2,548 attendees, with guest speakers from ISOC, AusCERT, the Internet System Consortium (ISC) and ICANN.

academy.apnic.net/en

4. Community Trainers

The contracts of 19 Community Trainers (CTs) were renewed and five new CTs were recruited, from Fiji, Indonesia, India and Nepal. Additional CT support was provided through improved onboarding, presentation skills development, access to collaboration tools and additional content.

CTs provided training at events including bdNOG 11, MMNOG, SANOG 35 and an online Internet Routing workshop for Timor-Leste.

training.apnic.net/community-trainers

3E APNIC Academy – continued

5. Technical assistance

APNIC provided technical assistance to 12 Members in Brunei, Australia, Fiji, Malaysia, Maldives, Nepal, Tonga, and Viet Nam on IXP operations, IPv6 and routing security.

www.apnic.net/tas

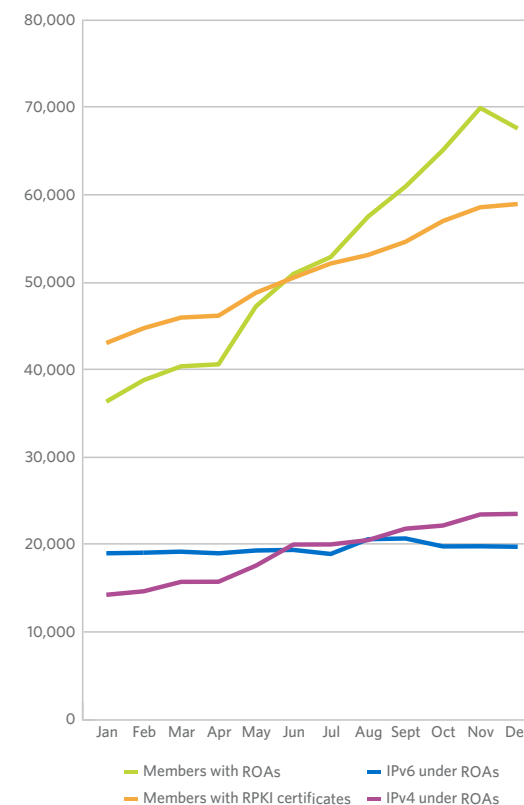
6. RPKI awareness and deployment support

Outreach activities on Route Origin Authorization (ROA) and Route Origin Validation (ROV) awareness and support were conducted in Australia, Maldives, Mongolia, Myanmar, Pakistan, Tonga and Sri Lanka. This outreach work helped Mongolia achieve 100% ROA coverage in October.

Eighteen RPKI-focused training events were delivered during the year (three face-to-face and 15 online tutorials) and 40 RPKI-tagged posts were published on the APNIC Blog.

RPKI adoption significantly increased in 2020. The percentage of Members with ROAs grew from 27.2% to 50.67% in 12 months.

RPKI ADOPTION





3E APNIC Academy – continued

7. IPv6 awareness and deployment support

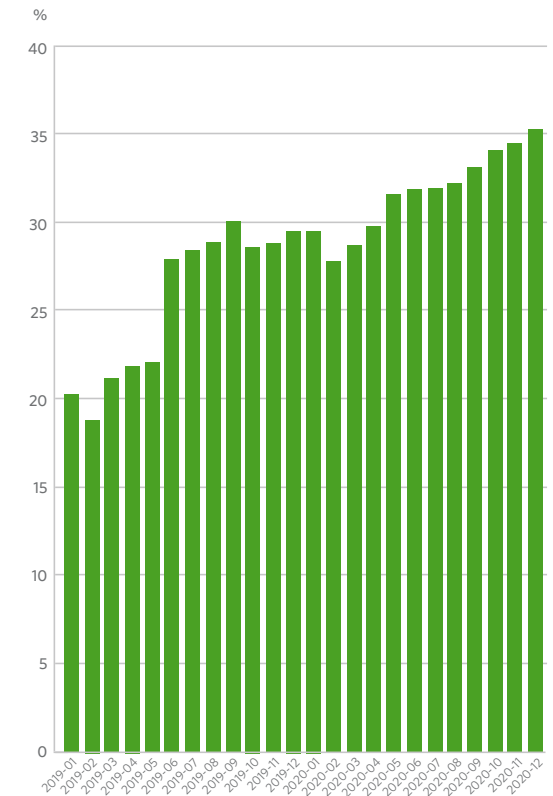
Face-to-face training sessions on IPv6 deployment were delivered at bdNOG 11, SANOG 35, and PhNOG 2020 (Feb) with an additional seven tutorials conducted online.

Four new IPv6 deployment success stories on PLDT (Philippines), 3BB (Thailand), Mytel (Myanmar) and Worldlink (Nepal) were published on the apnic.net website, bringing the total to 39. Additionally, 42 IPv6-tagged posts were published on the APNIC Blog.

At the end of 2020, IPv6 capability for the APNIC region was 35.3% as measured by APNIC Labs.

www.apnic.net/ipv6

IPv6 CAPABILITY





3E APNIC Academy – continued

SUCCESS MEASURES – 3E

| | Results | Status |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|--------|
| Targets | | |
| Add Bengali language to APNIC Academy online platform | Completed | ✓ |
| Convert three old online training courses to new video-based format | 2 completed | ✗ |
| Develop new training content (labs, modules or courses) in the areas of IPv6, Internet Routing, Network Security, SDN & Automation, Network Management & Monitoring and Linux System Administration | 6 virtual labs 3 instructor-led labs | ✓ |
| Conduct 60+ face-to-face training sessions equitably across the four sub-regions | 10 F2F training sessions 46 live online training sessions 18 live webinars | ✓ |
| Recruit and maintain a pool of 25 qualified Community Trainers from four sub-regions | 24/25 CTs | ✗ |
| Start conducting structured technical assistance over the APNIC Academy online platform | 2021 scheduled launch | ✗ |
| Publish four IPv6 deployment case studies | 4 published | ✓ |



3E APNIC Academy – continued

INVESTMENTS

8. APNIC Academy development →

APNIC Academy development included the following:

- A new course catalogue and learning pathways guide was added.
- A registration system for APNIC Foundation projects was completed, including Keycloak integration for improved demographic reporting.
- Bengali translation of the Academy website and courses was completed for launch in 2021.
- Technical design work for the technical assistance platform was completed, with the platform build to commence in early 2021.

| 2020 Investment | Member Benefit |
|----------------------------------|-------------------------------------------------------------------------------------|
| APNIC Academy development | Improved access to APNIC's training offerings and technical assistance |
| | Improved experience and satisfaction with training services across all skill levels |
| | Greater access to training in more economies with language barriers |
| Status: Ongoing | |



3F Internet Infrastructure Deployment

OPERATIONS

1. Internet infrastructure deployment

Network equipment was donated to Fiji IXP, Lahore IX, BKNIX, and Bhutan IX to support IXP deployment and upgrades. Technical advice on topics including IXP design, route server filtering policy, and ROV deployment was provided to IXP operators in Malaysia, Hong Kong, Viet Nam and the Maldives.

APNIC assisted with the deployment of K-root instances in China (with CAICT) and Ho Chi Minh City, Viet Nam (with VNIX) and upgraded the J and K-root instances in Brisbane.

A new M-root instance was deployed in Brisbane under an agreement between APNIC, the WIDE Project and JPRS (see 3F.3).

2. Honeynet deployment

The Community Honeynet project was expanded with the addition of five new partners in Bangladesh, Hong Kong, Malaysia, Indonesia and Japan.

The backend system serving the Community Honeynet was upgraded, with Honeynet information feeds provided to Dashboard of Autonomous System Health (DASH) users (see 4A.2).

RESOURCING

| | Budget | Actual |
|----------|-------------|-------------|
| FTE | 1.10 | 0.94 |
| Expenses | \$1,324,458 | \$1,009,209 |
| CAPEX | \$395,000 | \$17,288 |



3F Internet Infrastructure Deployment – continued

SUCCESS MEASURES – 3F

| | Results | Status |
|---------------------------------------------------------------------------------------|----------------|--------|
| Targets | | |
| Support deployment of at least two new or upgraded IXPs | 3 IXPs | ✓ |
| Support deployment of at least six new rootserver instances at IXPs or other networks | 3/6 completed | ✗ |
| Support at least six IXPs to deploy RPKI on their route servers | 2/6 IXPs | ✗ |
| Deploy at least four RIPE Atlas anchors at various networks | 1/4 deployment | ✗ |
| Establish five new Community Honeynet partners | 5 new partners | ✓ |



3F Internet Infrastructure Deployment – continued

INVESTMENTS

3. M-root anycast instance deployment →

A Memorandum of Understanding (MoU) was signed between APNIC, the WIDE project and JPRS to expand M-root deployment throughout the region.

The first deployment was made in one of APNIC's Brisbane data centres (the first M-root deployment in Australia), connecting to two IXPs. Two M-root instances were in progress in the Philippines and Guam.

4. Security threat sharing platform →

The security threat sharing platform was deployed, integrating data from CERTs/CSIRTs and security researchers on incidents being observed and analysed by the community.

| 2020 Investment | Member Benefit |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| M-root anycast instance deployment | <p>Faster and more reliable DNS service</p> <p>Faster and easier deployment of root DNS anycast instances at desirable or underserved locations</p> |
| Status: Ongoing | |

| | |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Security threat sharing platform | <p>Access to actionable threat information to help protect infrastructure and customers</p> <p>Increased situational awareness on cybersecurity threats</p> |
| Status: Completed | |



4. INFORMATION



OBJECTIVE

Support Internet development with needed network information services, and research outcomes which are of demonstrated value to the community.

WORKSTREAMS

- 4A. Information Products
- 4B. Research and Analysis

INFORMATION - SUMMARY

| | Budget | Actual |
|----------|-------------|-------------|
| FTE | 5.75 | 7.42 |
| Expenses | \$1,643,653 | \$1,575,193 |
| CAPEX | \$80,000 | \$48,643 |

4A Information Products

OPERATIONS

1. APNIC Blog 🔄

The APNIC Blog averaged 64,778 unique views per month in 2020, a 35% increase on 2019's monthly average of 48,026. There were 185 Guest Posts, representing 56% of total opinion posts (an increase on 2019's 49%), with 395 posts in total.

An influential Guest Post on Chromium's impact on DNS queries led to redevelopment of Chromium code and a 41% reduction in global root zone traffic by the end of 2020.

The Blog passed the milestone of 2.5 million views (all-time) in October and in the past five years annual Blog views have increased 291%.

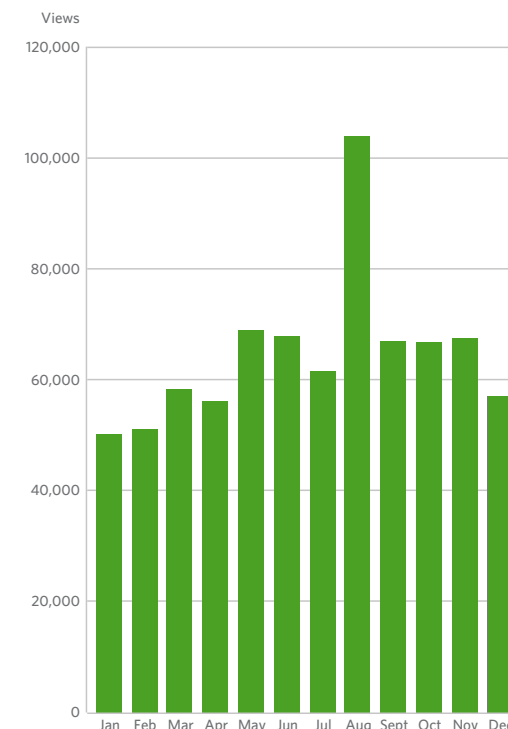
2. Information product management 🔄

Improvements to the Internet Directory, based on user data and feedback, included new RDAP and whoas tabs, a comparison mode for AS interconnection diagrams, interface improvements (such as summary figures above charts) and improvements to map views. Further development also began on economy and sub-regional snapshot functions for a 2021 release.

DASH v1.0, which provides network security health indicators, was released during APNIC 50 in September. Users increased to 1,914 during the year, with APNIC's security specialists receiving 23 requests for additional information from DASH users. New recurring reporting functionality is under development.

A new version of NetOX was also released during APNIC 50, including welcome page, navigation improvements and pilot Chinese language options (simplified and traditional). NetOX users increased to 2,332 during the year.

BLOG VIEWS



RESOURCING

| | Budget | Actual |
|----------|-----------|-----------|
| FTE | 4.90 | 6.33 |
| Expenses | \$794,498 | \$878,750 |
| CAPEX | - | - |

4A Information Products – continued

SUCCESS MEASURES – 4A

| | Results | Status |
|------------------------------------------------------------------------------------------------------|---------------------------------|--------|
| Targets | | |
| Reach 2.4 million blog views (all time) | 2,638,935 views | ✓ |
| Average 50,000 blog views per month | 64,478/month | ✓ |
| Maintain blog Guest Post ratio between 45 to 50%+ | 56% | ✓ |
| Achieve a net promoter score higher than 70 for Internet Directory, NetOx and DASH | 37, 71 and 68 respectively | ✗ |
| Achieve a usability score higher than 4.5 for Internet Directory, NetOx and DASH | 4.1, 4.7 and 4.6 respectively | ✗ |
| Achieve at least 30% returning users to the Internet Directory, NetOX and DASH | 138%, 206% and 22% respectively | ✗ |
| Participation in user research activities of at least eight users per product during the year | 66 participants | ✓ |

4B Research and Analysis

OPERATIONS

1. Conducting research and measurements

APNIC Labs research activities included:

- Development and release of an RPKI ROV monitor, examining progressive deployment of ROV filters in the network.
- New measurements on the use of IPv6 as a transport protocol for the DNS and IPv6 Extension Header handling.
- Analysis of advertised, unadvertised and reserved address pools over time.
- Reporting on the annual state of BGP, and further development of routing bogon and CIDR reports, as input to the ISOC MANRS activity. Work continues on automated BGP anomaly detection.
- Analysis of the handling of large DNS responses, adoption of DOH, and DNS query patterns.

2. Sharing research outcomes

Research findings were shared at technical forums globally, with 39 online presentations delivered, to help network engineers and policy makers make better decisions about Internet design and development. There were 26 articles published on the APNIC Blog, including research findings, analysis of trust architecture, and commentary on new Internet technologies.

labs.apnic.net

RESOURCING

| | Budget | Actual |
|----------|-----------|-----------|
| FTE | 0.85 | 1.09 |
| Expenses | \$849,155 | \$696,443 |
| CAPEX | \$80,000 | \$48,643 |



4B Research and Analysis – continued

3. Cooperative research

APNIC entered into a cooperative research program with ISOC in support of MANRS, providing a feed of routing data.

As part of a cooperative research agreement with ICANN, a measurement framework for the Identifiers Technology Health Indicators (ITHI) program was developed, as well as collaborative measurements on aspects of the DNS and DNSSEC.

4B Research and Analysis – continued

SUCCESS MEASURES – 4B

| | Results | Status |
|-------------------------------------------------------|------------------|--------|
| Targets | | |
| Twelve research articles and reports published | 26 published | ✓ |
| Ten research presentations delivered | 39 presentations | ✓ |
| Two presentations to Policy SIG meetings | 1 presentation | ✗ |



5. CAPABILITY



OBJECTIVES:

- Sustain a healthy and resilient organization.
- Develop a strong service culture driven by people committed to APNIC’s vision and values.
- Provide stable and secure technical infrastructure to support APNIC operations and services.

WORKSTREAMS:

- 5A. Internal Technical Infrastructure
- 5B. Finance and Business Services
- 5C. Employee Experience
- 5D. Governance

CAPABILITY - SUMMARY

| | Budget | Actual |
|----------|-------------|-------------|
| FTE | 25.30 | 27.00 |
| Expenses | \$7,692,342 | \$7,336,436 |
| CAPEX | \$262,600 | \$426,178 |

5A Internal Technical Infrastructure

OPERATIONS

1. Information architecture and management

The workflow for documenting and implementing APIs was reviewed and improved, with the use of OpenAPI to describe internal APIs now standard practice.

Technical selection guidelines were improved for product development teams designing new features or considering improvements.

Requirements for inter-system tracing and management have been incorporated into 2021 operations planning.

2. Network and infrastructure operations

The costs of existing transit and peering connectivity in Brisbane were reviewed and a new gigabit IX peering connection with EdgelX Australia and APNIC's data centre, NextDC B1, was established. Redundant peering with Google began via PCCW Console Connect from the data centre, in addition to an existing peering arrangement via Megaport.

The APNIC network was deemed MANRS-compliant after an ISOC evaluation. APNIC is an official MANRS participant.

The Secretariat office Wi-Fi was upgraded to support the Wi-Fi 6 standard, providing better coverage.

RESOURCING

| | Budget | Actual |
|----------|-------------|-------------|
| FTE | 13.10 | 13.35 |
| Expenses | \$3,140,201 | \$3,152,562 |
| CAPEX | \$207,600 | \$411,770 |

5A Internal Technical Infrastructure – continued

3. System and platform operations

To improve online service performance, a Google Cloud Platform facility was established with a Kubernetes (GKE) cluster. RDAP was deployed to this facility as a highly available service, with rolling update capability to allow zero-downtime upgrades. Cloudflare was configured to load balance production traffic to the GKE cluster supporting RDAP, with the goal of directing traffic to the closest multi-region cluster in future.

The infrastructure-as-code (terraform) is being written to allow deployment of GKE clusters to multiple regions within the same GCP Virtual Private Cloud (VPC) network.

Production usage data from the Sydney cluster was analysed to determine the best cost options for multiple RDAP deployments. Individual NIR RDAP services were also deployed on the GCP.

Cloudflare was reconfigured to use heavy caching of APNIC public websites to improve response times and availability. APNIC deprecated TLSv1.0 and v1.1 on all online services.

The Hardware Security Module (HSM) was also reconfigured to create a separate key for the RPKI ASO ROA (see 2B.3).

| Core system uptime | | Average data centre bandwidth usage (Mbps) | | Average query rates (per second) | |
|----------------------|--------|--------------------------------------------|-----|----------------------------------|--------|
| FTP | 99.98% | AU edge inbound | 53 | Whois | 396 |
| MyAPNIC | 99.97% | AU edge outbound | 210 | RDAP | 58.52 |
| RDNS | 100% | JP edge inbound | 70 | RDNS | 10,600 |
| RDNS DNSSEC Validity | 100% | | | RPKI | 31 |
| Whois | 100% | | | FTP | 4.79 |
| RPKI | 99.99% | | | MyAPNIC | 0.53 |
| RDAP | 99.97% | | | | |



5A Internal Technical Infrastructure – continued

4. CSIRT operations

A Vulnerability Reporting Program was launched in July, along with a new GPG key for the CSIRT email (csirt@apnic.net). APNIC received 31 unique and verified vulnerability reports from external security researchers between July and December.

External penetration testing was completed and detected no high severity vulnerabilities. Mitigation tasks were assigned to responsible technical teams for resolution and additional testing is ongoing, focusing on potential network vulnerabilities.

As part of ISMS for ISO 27001 preparations, the internal Acceptable Use Policy (AUP) and Bring Your Own Device (BYOD) policy were updated. Staff also received regular security awareness training, including seven security advice documents. An audit of administrator access accounts, and of current technical controls against CIS controls, was conducted in June.

An ISO 27001 gap analysis was conducted and analysis and remediation is work underway.

5. Enterprise application management

S/MIME Digital Signing and mail encryption was implemented using an external CA for better efficiency. All staff and CTs were also migrated to Okta authentication for web application access.

Development of a Legacy Application Roadmap began to move internal applications away from certificate-based authentication to modern OpenID Connect standards in 2021.

Litmos was also implemented for tracking of staff training and policy compliance.

5A Internal Technical Infrastructure – continued

SUCCESS MEASURES – 5A

| | Results | Status |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|--------|
| Targets | | |
| Develop dependency management framework using APIs to map system dependencies | Completed | ✓ |
| Availability of 99.95% for critical APNIC services and 99.9% for non-critical APNIC services | 99.98% critical services 99.99% non-critical services | ✓ |
| Annual stocktake and audit of all IT hardware completed | Completed | ✓ |
| Begin investigations and notify senior management within two hours of on-call notification and achieve containment within four hours for any critical incident | No critical incident reported | ✓ |
| All EC, Community Trainers, and APNIC staff credentials managed under OKTA | Completed | ✓ |
| Roadmap completed for removal of legacy data systems | 2021 scheduled completion | ✗ |



5A Internal Technical Infrastructure – continued

INVESTMENTS

6. Network presence at Asia Pacific Internet hubs →

A new direct remote connection from APNIC's Brisbane data centre to Equinix IX in Singapore was established, for direct peering and reduced latency with networks in South and South East Asia. A direct remote connection from Brisbane to HKIX in Hong Kong is in progress.

Reachability is currently being monitored using RIPE Atlas anchors from several locations.

| 2020 Investment | Member Benefit |
|---------------------------------------------------------------|--------------------------------------------------------|
| Network presence at Asia Pacific Internet hubs | Fast and reliable access to APNIC's online services |
| Status: Completed | |

5B Finance and Business Services

OPERATIONS

1. Knowledge management

The staff intranet was transferred from Foswiki to Confluence.

2. Financial services

A new PBCS financial reporting tool was implemented and financial reports and forecasting were transitioned to the platform.

The annual audit of APNIC's 2019 financial accounts was completed by Deloitte and presented to the EC at APNIC 49.

3. Business services

An external full recertification audit of APNIC's ISO9001:2016 quality management system was successfully completed in August.

In response to the COVID-19 pandemic, a COVID-19 BCP response team was established in January to oversee APNIC staff travel, office operations and activities. A staff 'work from home' plan was implemented in March, with the COVID-19 situation reviewed weekly and policies adjusted as needed.

RESOURCING

| | Budget | Actual |
|----------|-------------|-------------|
| FTE | 8.20 | 7.02 |
| Expenses | \$1,999,138 | \$1,821,675 |
| CAPEX | \$55,000 | \$14,408 |



5B Finance and Business Services – continued

SUCCESS MEASURES – 5B

| | Results | Status |
|----------------------------------------------------------------------------------|-----------|--------|
| Targets | | |
| Knowledge management tools identified, and implementation project plan developed | Completed | ✓ |
| Successful audit of APNIC's annual financial accounts | Completed | ✓ |
| Successful completion of annual ISO quality management compliance audit | Completed | ✓ |
| Successful implementation of the new PBCS financial reporting tool and framework | Completed | ✓ |
| Quarterly BCP scenario testing undertaken | Completed | ✓ |



5B Finance and Business Services – continued

INVESTMENTS

4. Business intelligence →

A production data warehouse system, incorporating customer and registration data, was deployed in August to provide better analysis and consistent reporting. In December, automated extract, transform and load (ETL) processes began archiving data into the warehouse on a daily basis.

The initial data mart development process resulted in significant improvements to the data warehouse deployment. A data mart capable of producing reporting information will be deployed in the first quarter of 2021.

| 2020 Investment | Member Benefit |
|------------------------------|-------------------------------------------------------------------------------------------------------|
| Business intelligence | Improved Secretariat decision-making and easier access to structured information for service requests |
| | Improved reporting to APNIC EC and Members |
| Status: Ongoing | |

5C Employee Experience

OPERATIONS

1. Organizational development

There was a focus on increasing the use of Agile tools and methodologies by both technical and non-technical teams. All non-product teams completed ICAgile Certification in Agile Fundamentals.

All members of the APNIC executive, management team and specialists participated in a Leadership Development Program (ASPIRE) between July and November.

Virtual presentation skills training was provided to staff and Community Trainers.

2. Physical work environment management

A hybrid of office access and work from home arrangements was established with no service or performance interruptions as a result of COVID-19.

The security surveillance system was upgraded in August.

RESOURCING

| | Budget | Actual |
|----------|-------------|-------------|
| FTE | 2.45 | 5.10 |
| Expenses | \$1,692,464 | \$1,618,344 |
| CAPEX | - | - |

5C Employee Experience – continued

3. Talent attraction and retention

APNIC filled 13 staff roles in 2020 (including four casual conversions and three new roles):

- Senior DevOps Engineer
- Systems Administrator (Internal Services)
- Senior Full Stack Developer
- Senior Digital Communications Officer
- Network Analyst/Technical Trainer
- Senior Advisor – Strategic Engagement
- Senior Network Analyst/Technical Trainer
- Salesforce Developer/Administrator
- Finance Manager/Management Accountant Business Services Co-ordinator
- People Operations Manager
- Full Stack Developer
- Web Designer/Developer

In addition, several casual and contract roles were filled:

- Internet Resource Analysts
- People Operations Coordinator
- UX/UI Designer
- Full Stack Developers

Five new Community Trainers were also engaged.

4. Policies and benefits management

Policies to accommodate legislative changes and organizational requirements were established and reviewed. Policies, resource plans, office rosters and regular bulletins all related to managing the Secretariat's response to the COVID-19 pandemic were developed.

Salary and benefits reviews were completed in December, following annual performance reviews and an audit of role market pricing.

5C Employee Experience – continued

SUCCESS MEASURES – 5C

| | Results | Status |
|------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------|
| Targets | | |
| Strategic goals clearly cascade to individual performance measures in 2020 annual reviews | Postponed to Jan 2021 | ✗ |
| Risk management data demonstrating any WHS incidents are not caused by APNIC's local or remote environments | Achieved | ✓ |
| Building surveillance system upgraded | Completed | ✓ |
| Staff turnover rate is within acceptable benchmarks of between 5 and 15% | 3.5 % turnover | ✓ |
| Professional development budget is fully spent, and addresses needs identified in performance reviews wherever possible | Completed | ✓ |
| Identify workplace policies that are not aligned with best practice in Australia and provide recommendations for 2021 budget | Completed | ✓ |

5C Employee Experience – continued

INVESTMENTS

5. Product management →

Product teams were established for the Academy and enterprise applications. Staff also received product management training, with ongoing coaching provided by external consultants and an internal product management coach.

| 2020 Investment | Member Benefit |
|---------------------------|--------------------------------------------------------------------------------------------------------------------|
| Product management | Development and management of products and services that are validated with the needs of Members and the community |
| Status: Completed | |



5D Governance

OPERATIONS

1. Executive Council (EC) support

Sumon Ahmed Sabir and Vincent "Achie" Atienza were elected to the APNIC EC for the first time at APNIC 49, and participated in the EC induction program in early April. Kam Sze Yeung was re-elected to the EC for a third term.

The first EC meeting of the year was held in Melbourne on 18 and 21 February, followed by online meetings on 17 March, 4 May, 22-24 June, 4 and 11 September, and 7-8 December 2020.

2. Corporate governance and legal

A revised Strategic Risk Register was presented to the EC in June, incorporating feedback from the EC meeting held at APNIC 49, and the strategic planning workshops in 2019.

An updated APNIC Privacy Statement was published in March. Staff were provided with privacy training to ensure awareness of privacy law obligations. A separate Privacy Statement for the APNIC Foundation was also published.

Crisis management and communication training was provided to all members of the leadership team in March.

RESOURCING

| | Budget | Actual |
|----------|-----------|-----------|
| FTE | 1.55 | 1.53 |
| Expenses | \$860,539 | \$743,856 |
| CAPEX | - | - |



5D Governance – continued

SUCCESS MEASURES – 5D

| | | Results | Status |
|---------------------------------------------------|--|-----------|--------|
| Targets | | | |
| Revised Strategic Risk Register fully implemented | | Completed | ✓ |



2020 FINANCIAL REPORT BY ACTIVITY

| Activity | FTE | | | CAPEX | | | OPEX | | |
|-----------------------------------|--------------|--------------|--------------|-------------------|-------------------|-----------------|-------------------|-------------------|-------------------|
| | Actual 2020 | Budget 2020 | Variance | Actual (AUD) 2020 | Budget (AUD) 2020 | Variance (AUD) | Actual (AUD) 2020 | Budget (AUD) 2020 | Variance (AUD) |
| Member Services | 9.35 | 9.80 | -0.45 | 0 | 0 | 0 | 2,301,059 | 2,461,629 | -160,570 |
| Membership Products | 7.45 | 7.15 | 0.30 | 0 | 0 | 0 | 1,256,789 | 1,127,922 | 128,867 |
| Membership Reporting | 1.11 | 0.60 | 0.51 | 0 | 0 | 0 | 447,994 | 633,245 | -185,251 |
| Membership - Total | 17.91 | 17.55 | 0.36 | 0 | 0 | 0 | 4,005,842 | 4,222,796 | -216,954 |
| Registration Services | 4.78 | 3.70 | 1.08 | 0 | 0 | 0 | 664,335 | 645,389 | 18,946 |
| Registry Products | 5.11 | 5.30 | -0.19 | 0 | 0 | 0 | 909,329 | 825,807 | 83,522 |
| Policy Development | 0.71 | 0.85 | -0.14 | 0 | 0 | 0 | 381,191 | 640,320 | -259,129 |
| Registry - Total | 10.60 | 9.85 | 0.75 | 0 | 0 | 0 | 1,954,855 | 2,111,516 | -156,661 |
| APNIC Conferences | 4.36 | 4.60 | -0.24 | 4,174 | 1,000 | 3,174 | 1,082,485 | 1,405,301 | -322,816 |
| Foundation Support | 1.41 | 1.15 | 0.26 | 0 | 0 | 0 | 972,229 | 865,463 | 106,766 |
| Community Engagement | 5.69 | 7.15 | -1.46 | 0 | 0 | 0 | 1,776,609 | 2,493,689 | -717,080 |
| Community Participation | 0.56 | 1.10 | -0.54 | 0 | 0 | 0 | 194,046 | 203,283 | -9,237 |
| APNIC Academy | 9.10 | 8.45 | 0.65 | 20,991 | 0 | 20,991 | 1,875,366 | 2,330,523 | -455,157 |
| Internet Infrastructure Support | 0.94 | 1.10 | -0.16 | 17,288 | 395,000 | -377,712 | 1,009,209 | 1,324,458 | -315,249 |
| Development - Total | 22.06 | 23.55 | -1.49 | 42,453 | 396,000 | -353,547 | 6,909,943 | 8,622,717 | -1,712,774 |
| Information Products | 6.33 | 4.90 | 1.43 | 0 | 0 | 0 | 878,750 | 794,498 | 84,252 |
| Research and Analysis | 1.09 | 0.85 | 0.24 | 48,643 | 80,000 | -31,357 | 696,443 | 849,155 | -152,712 |
| Information - Total | 7.42 | 5.75 | 1.67 | 48,643 | 80,000 | -31,357 | 1,575,193 | 1,643,653 | -68,460 |
| Internal Technical Infrastructure | 13.35 | 13.10 | 0.25 | 411,770 | 207,600 | 204,170 | 3,152,562 | 3,140,201 | 12,361 |
| Finance and Business Services | 7.02 | 8.20 | -1.18 | 14,408 | 55,000 | -40,592 | 1,821,675 | 1,999,138 | -177,463 |
| Employee Experience | 5.10 | 2.45 | 2.65 | 0 | 0 | 0 | 1,618,344 | 1,692,464 | -74,120 |
| Governance | 1.53 | 1.55 | -0.02 | 0 | 0 | 0 | 743,856 | 860,539 | -116,683 |
| Capability - Total | 27.00 | 25.30 | 1.70 | 426,178 | 262,600 | 163,578 | 7,336,436 | 7,692,342 | -355,906 |
| Total | 85.00 | 82.00 | 2.99 | 517,274 | 738,600 | -221,326 | 21,782,270 | 24,293,024 | -2,510,754 |

Note: Some numbers presented in this chart may not add up precisely to the totals provided due to rounding.



STATEMENT OF FINANCIAL POSITION

For a better understanding of APNIC Pty Ltd's financial position and performance, as represented by the results of its operations for the financial year ended 31 December 2020, the statement of financial position, and statement of income, should be read in conjunction with the annual statutory financial report and the audit report contained therein.

| | 2020 (AUD) | 2019 (AUD) | % change from 2019 |
|--------------------------------------|-------------------|-------------------|--------------------|
| Assets | | | |
| Current assets | | | |
| Cash and cash equivalents | 7,081,222 | 4,028,308 | 76% |
| Trade and other receivables | 5,356,419 | 5,643,606 | -5% |
| Other current assets | 780,653 | 836,557 | -7% |
| Total current assets | 13,218,294 | 10,508,471 | 26% |
| Non-current assets | | | |
| Financial assets | 31,036,408 | 27,702,841 | 12% |
| Property, plant and equipment | 6,948,694 | 7,149,423 | -3% |
| Total non-current assets | 37,985,102 | 34,852,264 | 9% |
| Total assets | 51,203,396 | 45,360,735 | 13% |
| Liabilities | | | |
| Current liabilities | | | |
| Trade and other payables | 1,369,013 | 1,167,174 | 17% |
| Provisions | 2,233,396 | 1,801,421 | 24% |
| Unearned revenue | 11,885,376 | 10,570,081 | 12% |
| Total current liabilities | 15,487,785 | 13,538,676 | 14% |
| Non-current liabilities | | | |
| Deferred tax liabilities | 1,131,984 | 720,729 | 57% |
| Provisions | 406,744 | 376,628 | 8% |
| Total non-current liabilities | 1,538,728 | 1,097,357 | 40% |
| Total liabilities | 17,026,513 | 14,636,033 | 16% |
| Net assets | 34,176,883 | 30,724,702 | 11% |
| Equity | | | |
| Contributed equity | 1 | 1 | 0% |
| Retained earnings | 34,176,882 | 30,724,701 | 11% |
| Total equity | 34,176,883 | 30,724,702 | 11% |



STATEMENT OF INCOME

| | 2020 (AUD) | 2019 (AUD) | % change from 2019 |
|--------------------------------------------------------------------------|-------------------|-------------------|--------------------|
| Revenue | | | |
| Membership fees | 22,766,728 | 21,061,318 | 8% |
| Non-member fees | 260,483 | 255,751 | 2% |
| Reactivation fees | 18,400 | 16,900 | 9% |
| Sign-Up fees | 347,250 | 345,500 | 1% |
| Transfer fees | 216,016 | 173,831 | 24% |
| Sundry income | 534,307 | 435,603 | 23% |
| Foreign exchange gain/ (loss) | -72,448 | -4,739 | 1,429% |
| Operating revenue | 24,070,736 | 22,284,164 | 8% |
| Investment income | 924,590 | 981,871 | -6% |
| Total revenue | 24,995,326 | 23,266,035 | 7% |
| Expenses | | | |
| Communication expenses | 697,060 | 570,832 | 22% |
| Computer expenses | 1,216,809 | 1,067,957 | 14% |
| Contribution to APNIC Foundation | 760,890 | 762,179 | -0% |
| Contribution to ICANN | 223,432 | 263,386 | -15% |
| Depreciation expense | 707,658 | 862,055 | -18% |
| Meeting and training expenses | 135,335 | 425,704 | -68% |
| Office operating expenses | 290,543 | 342,806 | -15% |
| Professional fees | 1,932,613 | 1,820,443 | 6% |
| Salaries and personnel expenses | 14,070,813 | 12,789,661 | 10% |
| Sponsorship and publicity expenses | 437,724 | 627,766 | -30% |
| Travel expenses | 331,259 | 2,390,238 | -86% |
| Other operating expenses | 978,134 | 1,051,622 | -7% |
| Total expenses | 21,782,270 | 22,974,649 | -5% |
| Operating surplus | | | |
| Surplus before tax and fair value gain on financial assets | 3,213,056 | 291,386 | 1,003% |
| Fair value gain on financial assets at fair value through profit or loss | 650,379 | 2,169,284 | -70% |
| Surplus before income tax | 3,863,435 | 2,460,670 | 57% |
| Income tax expense | -411,254 | -556,953 | -26% |
| Surplus for the year | 3,452,181 | 1,903,717 | 81% |

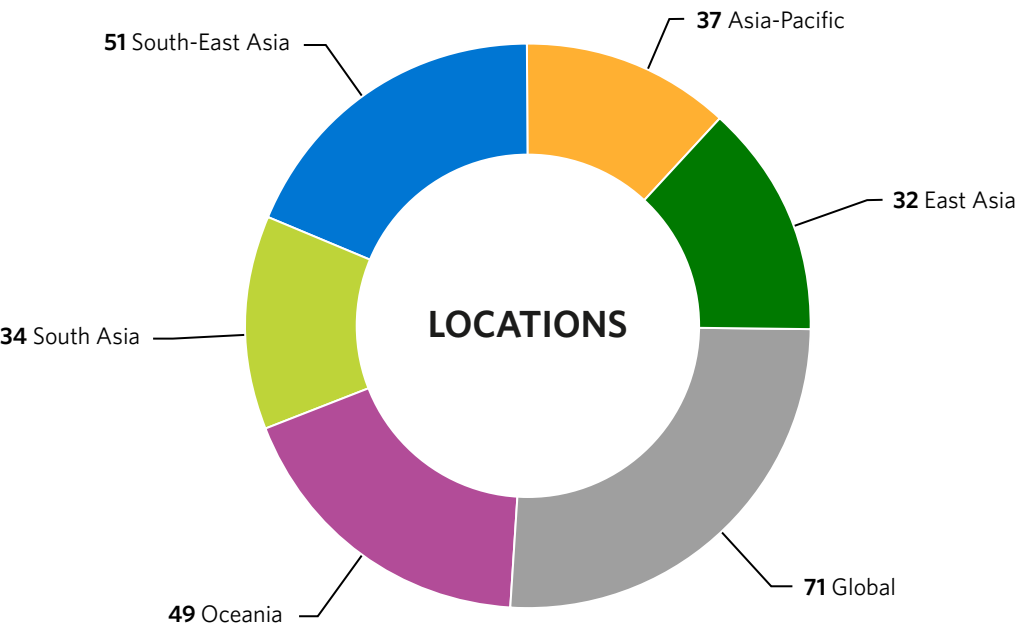
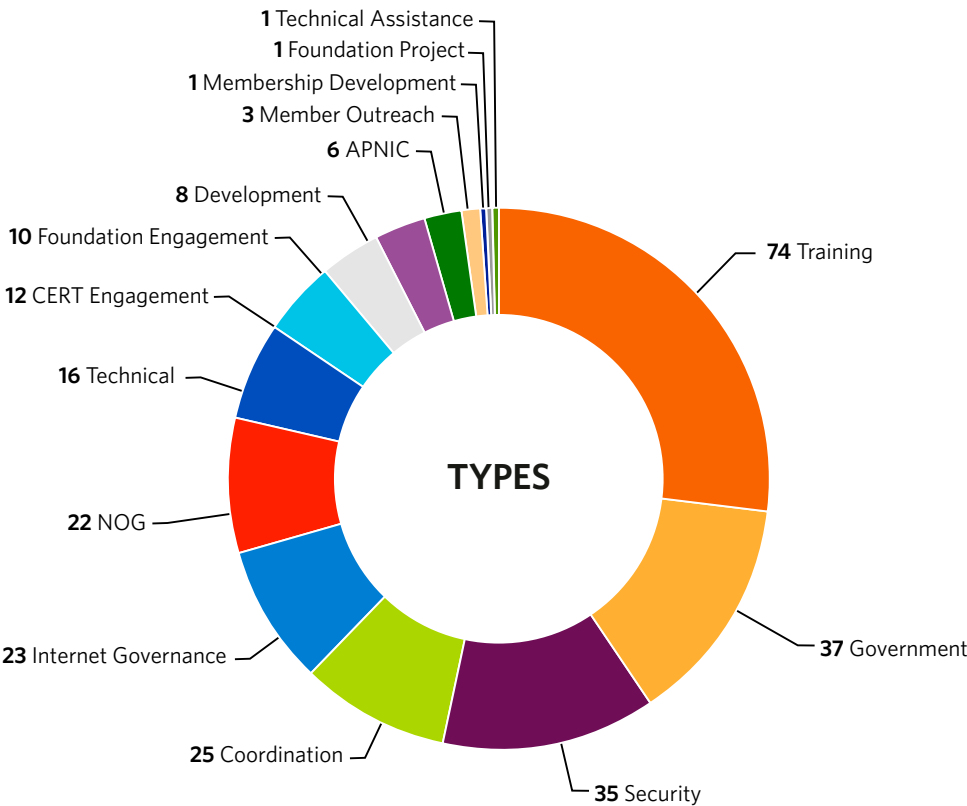


CASH FLOW STATEMENT (AUD)

| | 2020 (AUD) | 2019 (AUD) | % change from 2019 |
|---------------------------------------------------------------|--------------------|------------------|--------------------|
| Cash flows from operating activities | | | |
| Receipts from customers | 24,574,280 | 21,621,399 | 14% |
| Payments to suppliers and employees | (19,250,306) | (21,658,256) | -11% |
| Grants received | | | 0% |
| Interest received | 70,754 | 148,918 | -52% |
| Net cash inflow from operating activities | 5,394,728 | 112,061 | 4,714% |
| Cash flows from investing activities | | | |
| Investment distribution income | 853,836 | 832,953 | 3% |
| Payments for property, plant and equipment | (517,273) | (548,369) | -6% |
| Proceeds from sale of property, plant and equipment | 4,811 | 5,563 | -14% |
| Purchase of available-for-sale financial assets | (2,683,188) | (672,331) | 299% |
| Net cash (outflow) from investing activities | (2,341,814) | (382,184) | 513% |
| Net increase (decrease) in cash and cash equivalents | 3,052,914 | (270,123) | -1,230% |
| Cash and cash equivalents at the beginning of the year | 4,028,308 | 4,298,431 | -6% |
| Effects of exchange rate changes on cash and cash equivalents | | | 0% |
| Cash and cash equivalents at the end of year | 7,081,222 | 4,028,308 | 76% |



Community Engagement Summary



Engagements are units of measurement for meaningful interactions by APNIC staff with the community through events. There are currently 15 types of engagements in APNIC, as shown on pages 91 and 92.

Due to COVID-19 and related travel restrictions, APNIC’s participation at face-to-face events shifted to wholly online representation.

- APNIC
- CERT Engagement
- Coordination
- Development
- Foundation Engagement
- Foundation Projects
- Government
- Internet Governance
- Member Outreach
- Membership Development
- NOG
- Security
- Technical
- Technical Assistance
- Training

SOUTH ASIA

[illegible]

SOUTH EAST ASIA

[illegible]

EAST ASIA

[illegible]

OCEANIA

[illegible]



Supporters

APNIC acknowledges and thanks the following organizations for their generous support for APNIC conferences and training events.

Conference Sponsors:

(In alphabetical order)

| | | | |
|-------------------------------------------------------|-----------------------------------------|-----------------------------------------|------------------------------------------|
| @Tokyo | CNNIC, China Network Information Centre | JPIX, Japan Internet Exchange Co Ltd | NZNOG |
| Addrex | DE CIX | JPNIC, Japan Network Information Centre | PacNOG |
| Akamai | Equinix | Kentik | Paraqum Technologies |
| Aliter Networks | Extreme | KISA, Korea Internet & Security Agency | PCCW Global |
| AMSIX, Amsterdam Internet Exchange | Facebook | LARUS | PHCOLO |
| APJII, Asosiasi Penyelenggara Jasa Internet Indonesia | Flexoptix | Linx | SGIX, Singapore Internet Exchange |
| APNIC | Free BSD Foundation | Megaport | TEIN CC |
| AsiaConnect | GandiNet | Microsoft | Telia Carrier |
| AusNOG | Google | MyIX | Telstra |
| AWS | ICANN | Netflix | TWNIC, Taiwan Network Information Centre |
| Brenac | Internet Association of Australia | Netscout | V4Escrow |
| Cloudflare | Internet Society | Nexusguard | Verisign |
| | IPv4.Global | NSRC, Network Startup Resource Centre | Vocus Communications |

Training Sponsors:

| | |
|-------------------------------------------------------|-------------------------------------------------------------------|
| Institute of Electronics Engineers of the Philippines | Focus Infocom (MV) |
| Pakistan Telecommunication Authority (PTA) | Ministry of Transport and Communications (MTC) (TL) |
| Tencent (CN) | Authority for Info-Communications Technology Industry (AITI) (BN) |
| Maxis Broadband Sdn Bhd (MY) | |

| |
|----------------------------------|
| CNNIC |
| Myanmar Internet Exchange (MMIX) |



Appendix: Events attended in 2020

Following is the list of events in which APNIC staff participated. A star (*) indicates events where APNIC provided sponsorship.

JANUARY

Economy

| | |
|--------------------------------------------------------------------------|----|
| Foundation meetings - Tokyo Jan 2020 | JP |
| Securing Internet Routing Workshop | AU |
| 3rd ACEMS Workshop on Challenges of Data and Control of Networks (ACDCN) | AU |
| MMIX Peering Forum & MMNOG 2020* | MM |
| JANOG 45* | JP |
| SANOG 35* | PK |
| NZNOG 2020 | NZ |
| bdNOG 11* | BD |
| PNGTRAINING WS 15 - DNS & DNSSEC | PG |
| CERT Support for Pakistan Telecom Authority | PK |
| Intro to CSIRTs with LEARN | LK |

FEBRUARY

| | |
|--------------------------------------------------------|----|
| NANOG 78 | US |
| PhNOG 2020* | PH |
| 2020 Global Cybersecurity Capacity Building Conference | AU |
| 2020 Australasian Aid Conference | AU |
| APRICOT 2020 | AU |
| Cyber Safety Pasifika - Content Review Workshop | AU |
| NRO ECG | NL |
| Samoa IT Association (SITA) IT Security Seminar* | WS |
| APTLTD 77 Members Meeting & 2020 AGM | AU |
| Honeypot Project for HKPF | HK |

MARCH

| | |
|----------|----|
| ICANN 67 | MX |
| IETF 107 | CA |

APRIL

| | |
|------------------------------------|----|
| GFCE-V Meeting 2020 | NL |
| Securing Internet Routing tutorial | AU |
| Securing Internet Routing tutorial | AU |
| Cambodia CERT Security Talk | KH |
| ISOC-APNIC Tech Talk on RPKI 101 | AU |

MAY

| | |
|---------------------------------------------------------------------------|------|
| APT WTS20-2 | TH |
| Securing Internet Routing tutorial | AU |
| EU ATT&CK Community Workshop | BE |
| Infosec Jupyterthon 2020 | US |
| NRO EC Virtual Meeting | MY |
| Panel Discussion on CERT/CSIRT | ID |
| Suricata IDS / NSM Developer Webinar | US |
| APT Web Dialogue Series | TH |
| LACNIC 33 | CO |
| RIPE 80 | DE |
| FIRST Cyber Threat Intelligence Summit (CTI) | CH |
| Foundation Board Meeting 2020 | SG |
| Suricata IDS Tutorial with MYREN Community | MY |
| Securing Internet Routing tutorial (SE Asia/ East Asia) | OPEN |
| Securing Internet Routing tutorial (South Asia) | OPEN |
| Security Analysis Tutorial for Solomon Island Government Data Centre Team | SB |



JUNE

| | |
|-----------------------------------------------------------------------|------|
| NANOG 79 | US |
| ITU Telecommunication Development Advisory Group Meeting | CH |
| Global Stakeholders Dialogue on the Future of the Internet | FR |
| Introduction to IPv6 Webinar | PH |
| AVPN Conference 2020 | SG |
| Advanced Routing with Multihoming Online Workshop | PK |
| ITU 2020 Council Meeting | CH |
| I-star Leaders Meeting | US |
| DNS OARC 32a Workshop | FR |
| PITA Technical and Business Session | SB |
| PaCSON 2020 Virtual Session | NZ |
| Securing Internet Routing tutorial | OPEN |
| UNIDIR: Implementing Cyber Norms, National Experiences Good Practices | CH |
| RSCG and Legal Team Joint Meeting | NL |
| 2nd MAG Meeting 2020 | CH |
| IX 2020 - Internet Security & Mitigation of Risk Webinar | MN |
| Interim Meeting of the APT-WTSA20 Working Group 3 | TH |
| ARIN 45 | US |
| ROW #9 | US |
| PNGNOG Meet Up* | PG |
| FIRST.org Special Interest Groups (SIGs) Meetings | US |
| ICANN 68 | MY |
| WSIS Forum 2020 | CH |
| HKIGF 2020 | HK |
| ISOC ICOMM Virtual Event (MANRS) | US |
| 38th JPOPM | JP |
| Network Security tutorial (SE Asia / East Asia) | OPEN |
| AFRINIC Webinar 'Internet Infrastructure Support in Times of Crisis' | MU |
| UN INCB - Experts on Drug Trafficking | AT |
| PACNOG 26 | FJ |
| ReversingLabs 2020 | US |
| Networking from Home (South East Asia) | SG |
| Networking from Home (South Asia) | BD |

JULY

| | |
|-----------------------------------------------------------------------------|------|
| UNESCAP Webinar: Bringing affordable and reliable Internet to all (IXP) | TH |
| PaCSON Follow Up Virtual Session | NZ |
| VNNIC-APNIC Engagement Series | VN |
| Securing Internet Routing online tutorial | FJ |
| Network Security tutorial (South Asia) | OPEN |
| Broadband India Forum | IN |
| UN High Level Political Forum on Sustainable Development 2020 | US |
| Network Security tutorial (Oceania) | OPEN |
| PhNOG Virtual 2020 | PH |
| APT WTSA20-3 | CN |
| EU Cyber Direct - Closing the Gap | BE |
| UCEnet / LEA Engagement | NL |
| Networking From Home (East Asia) | HK |
| Fair Tech Forum | SG |
| SANS DFIR Summit | US |
| PhNOG DNSSEC tutorial | PH |
| Security Engagement with PK community | PK |
| ITU-T Study Group 13 Virtual Meeting | CH |
| IAA Webinar: Life Under Lockdown: How to stop heists, hijacks, and hostages | AU |
| ITU-T Study Group 11 Virtual Meeting | CH |
| DNS/DNSSEC tutorial (East Asia/ SE Asia) | OPEN |
| Digital Infrastructure: Building Our Digital World | US |
| Honeynet Threat Sharing Platform Webinar | ID |
| China IGF 2020 | CN |
| IPv6 tutorial | CN |
| APT WTDC21-1 | TH |
| IETF 108 | ES |
| RightsCon Online | US |
| Log Analysis Tutorial for Security Analysts | MN |
| DNS/DNSSEC tutorial (part 1) (South Asia) | OPEN |



AUGUST

| | |
|----------------------------------------------------------------------------------------------------------------|------|
| KHNOG 2 Online Webinar | HK |
| APAN 50 | HK |
| APAN 50 Introduction to Vulnerability Assessment and Penetration Testing tutorial and Segment Routing tutorial | AU |
| Networking from Home (Oceania) | OPEN |
| DNS/DNSSEC tutorial for Pacific | TH |
| 2nd WG on Pacific IXP and Capacity Training Workshop | US |
| Digital Infrastructure:Equity & Sustainability in Open Source | IN |
| INNOG 3* | SG |
| AVPN Webinar: Shifts in Chinese Private Sector Giving | SG |
| Global Cyber Policy Dialogues: Southeast Asia | IN |
| 7th IRINN OPM | US |
| DNS-OARC 32b | MY |
| RPKI Deployment for Maxis Broadband | SG |
| Global Cyber Policy Dialogues: Southeast Asia | MY |
| Security Webinar with Universiti Teknologi Malaysia | TH |
| 4th AP Information Superhighway (AP-IS) SC 2020 | NL |
| KubeCon + CloudNativeCon Virtual 2020 | PK |
| PKSIG 2020* | RU |
| APAC Online Policy Forum | TH |
| Virtual Interim Meeting of Working Groups of the APT WTSA-20 | OPEN |
| Advanced Routing tutorial (SE Asia/East Asia) | OPEN |
| Advanced Routing tutorial (South Asia) | JP |
| JANOG 46* | TH |
| 17th APT Telecommunication/ICT Development Forum (ADF-17) | MV |
| IPv6 Deployment tutorial | US |

SEPTEMBER

| | |
|---------------------------------------------------|------|
| ITU Global Symposium for Regulators 2020 (GSR-20) | CH |
| Advanced Routing tutorial (Oceania) | OPEN |
| APTLD 78 | TW |
| APNIC 50 (AP* and APIX Meeting) | *BD |
| AIS'20 (AFRINIC 32) | CD |

| | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| EU Cyber Forum 2020 | BE |
| GNA Community VCs 2020Q3 | DK |
| Virtual AusCERT 2020 Conference | AU |
| ITU Global Cyberdrill 2020 (Asia Pacific Regional Dialogue: CIRTs, Lessons Learnt from COVID-19 Crisis and Webinar: How to Reduce Cyber Risk and Increase National Cyber Resilience) | CH |
| IPv6 Deployment tutorial (SE Asia/ East Asia) | GB |
| LINX Presents: Steve Crocker and Geoff Huston | OPEN |
| ITU Interregional Meeting for WTSA-20 | GB |
| ISP start-up webinar | IN |
| SEEDIG 6 | TL |
| UN75 Commemoration | MD |
| ITU-T Telecommunication Standardization Advisory Group (TSAG) Virtual Meeting | US |
| Internet Routing tutorial | CH |
| UN General Debate of 75th Session | TL |
| Microsoft Ignite 2020 | US |
| Web Dialogue: New IP and global Internet governance | US |
| UN Digital Cooperation: Action Today for Future Generations | US |
| IPv6 Deployment tutorial (South Asia) | OPEN |
| HKNOG 9.0* | HK |
| RPKI Support for IN operators | IN |
| Security Workshop (Women in ICT Tonga) | TO |
| APrIGF 2020* | NP |
| AI3 & SOI Asia Joint ONLINE Meeting 2020 FALL | JP |
| DNS-OARC 33 | FR |
| TWNIC RPKI Day | TW |
| APCERT AGM | JP |
| ConneCTechAsia 2020 | SG |
| APT PRFP-13 | TH |
| VNIX-NOG 2020* | VN |
| IPv6 Deployment tutorial (Oceania) | OPEN |
| Security talk for Universiti Kuala Lumpur | MY |



OCTOBER

| | |
|-----------------------------------------------------------------------------------|----|
| NetThing 2020* | AU |
| LACNIC 34/LACNOG 2020 | BO |
| 8th INTERPOL-Europol Cybercrime Conference 2020 | NL |
| Slack Frontiers | US |
| IPv6 Deployment online tutorial | BN |
| inSIG 2020 | IN |
| 34th TWNIC OPM | TW |
| bdNOG 12* | BD |
| Cyber Safety Pasifika East Pacific (Tier 2 Internet Fundamentals) | FJ |
| ICANN 69 (22nd AGM) | DE |
| NetHui 2020 | NZ |
| Internet Routing Security tutorial | BD |
| APT WTSA-20 Virtual Interim Meeting for Working Groups | TH |
| ARIN 46 | US |
| APEC TEL 61 | MY |
| btNOG 7* | BT |
| NANOG 80 | US |
| Internet Routing with RPKI - Solomon Islands - Pacific Technical Training Project | SB |
| ISCR 2020 | KR |
| Sri Lanka CERT Cyber Security Week | LK |
| Cyber Safety Pasifika West Pacific (Tier 2 Internet Fundamentals) | VU |
| APT PRF-20 (20th APT Policy and Regulatory Forum) | TH |
| LINX Presents: The Internet model: fit for the future or creaking at the seams? | GB |
| SDN session for Women in ICT Tonga | TO |
| FIRST Regional Symposium Africa & Arab Region Plenary | MU |
| Network Security - Samoa - Pacific Technical Training Project | WS |
| Pacific Women in ICT October Meetup | FJ |
| RIPE 81 | IT |
| mnNOG 2 | MN |
| MNSEC 2020* | MN |
| Cyber Safety Pasifika Tier 2 (Palau) | PW |
| Youth IGF India 2020 | IN |

NOVEMBER

| | |
|---------------------------------------------------------------------------------|------|
| Network Security - Tonga - Pacific Technical Project | TO |
| KrCERT/CC APISC Training 2020 | KR |
| IGF 2020 | PL |
| ITU (RDF) Regional Development Forum for Asia and the Pacifics 2020 | TH |
| ACM SIG Conferences | US |
| bdIGF 2020* | BD |
| Network Security - Vanuatu - Pacific Technical Project | VU |
| TWIGF* | TW |
| Peering Asia 3.5v | TH |
| KRNIC/KISA Engagement Series | KR |
| Pacific IXP - First National Consultation | NZ |
| IETF 109 | TH |
| Network Security - Solomon Islands - Pacific Technical Training Project | SB |
| APT WTSA20-4 | TH |
| Annual FIRST Conference 2020 | CA |
| ITU 2020 Council - 2nd Virtual Consultation | CH |
| IPv6 training x2 | CN |
| Pacific Cyber Dialogue | PG |
| Digital Pacific Conference 2020 | WS |
| Internet Week Japan 2020 | JP |
| RPKI India Webinar 2 | IN |
| Beyond APIGA 2020 | KR |
| APSIG 2020* | NP |
| IPv6 tutorial | KH |
| OIC-CERT Conference 2020 | MY |
| GFCE Annual Meeting 2020 | CH |
| Segment Routing tutorial South Asia | OPEN |
| 1 C/D Digital Inclusion Roundtable discussion / Roadmap for Digital Cooperation | US |
| Marshall Center iPCSS | DE |

**DECEMBER**

| | |
|-------------------------------------------------------------------|------|
| PacNOG 27 | FJ |
| Segment Routing tutorial | OPEN |
| BTCIRT Community Workshop | BT |
| Dreamforce 2020 | AU |
| IDNIC AMM 2020 | ID |
| Introduction to SDN tutorial | MM |
| ITU-T Study Group 11 and 13 | CH |
| Connections 2020 | IN |
| Segment Routing tutorial Oceania | OPEN |
| MANRS Tech Talk with Geoff Huston | AU |
| bSides Brisbane 2020 | AU |
| APT Training – ICT and Policy Regulation | IN |
| CNCERT International Partnership in Emergency Response Conference | CN |
| LKNOG 4 | LK |
| CSIRT.id Virtual Seminar | ID |

**Helpdesk**

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