

APNIC EC Meeting Minutes

Online meeting

Friday, 4 September 2020, 11:00 – 15:50 (UTC +10)

Friday, 11 September 2020, 11:00 – 14:15 (UTC +10)

Meeting started at 11:00 (UTC +10), Friday, 4 September 2020

Present

Gaurab Raj Upadhaya, EC Chair
Kam Sze Yeung
Kenny Huang, Treasurer
Paul Wilson, Director General
Sumon Ahmed Sabir
Vincent Achie Atienza, Secretary
Yoshinobu Matsuzaki
Yuedong Zhang

Connie Chan, Senior Executive Assistant (minutes)
Craig Ng, General Counsel
Richard Brown, Business Director
Sanjaya, Deputy Director General

Apologies

Nil

Agenda

1. Opening of meeting and declaration of quorum
2. Agenda bashing
3. Declaration of interests
4. Review of minutes of last meeting and record of circular resolutions passed since the last meeting
5. Matters arising from the last meeting
6. EC Chair update
7. WH&S update
8. Financial reports and budget discussion
9. APNIC Survey report
10. APNIC conference update
11. Secretariat report
12. APIDT report
13. APNIC Foundation update
14. NRO Number Council (NC) election procedures
15. Review of APNIC 50 virtual conference
16. APNIC Foundation update (continued)
17. Review of Non-Member and historical resource holders' structure
18. IANA RC and NRO NC appointment positions
19. Risk register
20. Any other business
21. Next EC meeting

Minutes

1. Opening of meeting and declaration of quorum

The Chair of the Executive Council (EC Chair) welcomed all attendees to the meeting. The EC Chair declared the meeting open at 11:00 (UTC +10) on Friday, 4 September 2020, and noted that a quorum was present.

The EC Chair has designated Sumon Ahmed Sabir as the Chair of this meeting (Meeting Chair) and handed over the chairing of the meeting to him.

2. Agenda bashing

The Meeting Chair called for comments on the agenda. There were no new agenda items raised.

3. Declaration of interests

The Meeting Chair asked the EC members to review the Register of Interests (attached), declare any potential conflicts of interests, and for any such declaration to be recorded in the minutes.

All other EC members present confirmed their entries in the Register of Interests are complete and correct.

4. Review of minutes of last meeting and record of circular resolutions passed since the last meeting

The following circular resolutions (that require the agreement of all EC members who are entitled to vote on the resolution) were passed by the EC during the period between the last EC meeting and this meeting and are recorded in these minutes for completeness.

Resolution 2020-19: The EC resolved to adopt the minutes of the EC meeting of 22-24 June 2020.

5. Matters arising from the last meeting

The following matters from the previous meetings were completed:

Action item 2020-02: The Secretariat to update the risk register. [see agenda item #19]

Action item 2020-03: The EC directed Duncan Macintosh to conduct due diligence on two APNIC Foundation board candidates for EC consideration at the next EC meeting. [see agenda item #16]

Action item 2020-04: The DG to contact Bertrand Cherrier to confirm his willingness to accept the appointment for a further 12 months.

Action item 2020-05: The Secretariat to update the APNIC 50 NRO NC election procedures on the APNIC website.

6. EC Chair update

The EC Chair provided the EC Chair update. He noted that there had not been much to report since the last meeting. He noted that he had paid special attention to the ongoing NRO EC discussions.

7. WH&S update

Kam Sze Yeung spoke to the Workplace Health and Safety quarterly update. He also noted that the EC have completed the annual compliance training.

8. Financial reports and budget discussion

Irene Chan joined the meeting for this agenda item.

Richard Brown spoke to the financial report presentation (attached).

The EC considered the monthly financial report and the investment report for July 2020 (attached). The EC noted that APNIC is solvent and able to meet all current debts.

The July financial report highlights a net surplus of AUD 2M to date, with revenue tracking very close to the budget and expenses tracking at 11% under the budget forecast. At the end of July 2020, APNIC had a total of 8,136 Members serving 53 economies.

Richard Brown then presented the financial outlook for 2020 and 2021 for consideration by the EC.

The EC noted the impacts of COVID-19 on year-end results, forecasting a projected operating surplus of AUD 3.2M at the end of 2020. The EC also noted that the increase in surplus is mainly driven by the savings in expenses. The COVID-19 restrictions have had a significant impact on travel activity and expenses. It is expected that next year's travel expenses will be reduced by about 50%.

[Irene Chan left the meeting at 12:02 (UTC +10)]

9. APNIC Survey report

Brenda Mainland from Survey Matters joined the meeting for this agenda item.

Brenda Mainland spoke to the APNIC Survey report presentation (attached).

The EC is delighted to see the positive results of the APNIC Survey 2020 that will guide APNIC's activity planning and budget for 2021. The EC also discussed the areas for further improvement. The EC will publish a formal response to the survey.

[Brenda Mainland left the meeting at 13:08 (UTC +10)]

Meeting adjourned at 13:08 (UTC +10), Friday, 4 September 2020

Meeting resumed at 13:30 (UTC +10), Friday, 4 September 2020

10. APNIC conference update

Tony Smith joined the meeting for this agenda item, and gave a brief update on APNIC 50, APRICOT 2021, APNIC 52 and beyond.

Due to the COVID-19 pandemic, APRICOT 2021 will take place as an online event.

There is no further update on APNIC 52 and beyond. The Secretariat is monitoring the situation closely, and will provide an update by next APRICOT.

[Tony Smith left the meeting at 13:42 (UTC +10)]

11. Secretariat Report

The DG spoke to the Secretariat Report (attached).

The EC discussed several items in the Secretariat Report at length.

The DG then presented the HR report.

The EC considered the draft AMM agenda for APNIC 50 (attached).

Resolution 2020-20: The EC resolved to approve the draft agenda for the APNIC Member Meeting of 10 September 2020.

Motion proposed by Yoshinobu Matsuzaki; seconded by Vincent Achie Atienza. Passed unanimously.

12. APIDT update

The DG spoke to the APIDT Report. The EC noted that the general response has been very positive and that the process seems to have been acceptable to the community.

13. APNIC Foundation update

Duncan Macintosh joined the meeting for this agenda item. He spoke to the APNIC Foundation update presentation (attached).

The EC considered the proposed structure of the APNIC Foundation. The EC instructed Craig Ng to proceed with establishing APNIC Foundation Australia.

Action item 2020-06: Craig Ng to draft the Constitution of APNIC Foundation Australia for the EC to approve at the next EC meeting.

The EC considered the due diligence on the two APNIC Foundation board candidates. The EC will pass the resolution at the EC meeting next Friday, 11 September 2020.

[Duncan Macintosh left the meeting at 15:40 (UTC +10)]

14. NRO Number Council (NC) election procedures

Craig Ng spoke to the election procedures for the conduct of the APNIC 50 NRO NC election (attached).

[Kenny Huang left the meeting at 15:45 (UTC +10)]

Resolution 2020-21: The EC resolved to appoint Munir Hasan as Election Chair, Connie Chan and Andre Gelderblom of the APNIC Secretariat as Election Officers, for the APNIC 50 NRO NC election.

Motion proposed by Gaurab Raj Upadhaya; seconded by Yoshinobu Matsuzaki. Passed unanimously.

Meeting adjourned at 15:50 (UTC +10), Friday, 4 September 2020

Meeting resumed at 11:00 (UTC +10), Friday, 11 September 2020

15. Review of APNIC 50 virtual conference

Tony Smith joined the meeting for this agenda item, and spoke to the conference statistics presentation (attached).

The EC were pleased with the positive results overall, and discussed the areas for future improvement.

[Tony Smith left the meeting at 11:35 (UTC +10)]

16. APNIC Foundation update (continued)

Duncan Macintosh joined the meeting for this agenda item.

The EC discussed the due diligence on the APNIC Foundation board candidates.

[Confidential material redacted]

[Duncan Macintosh left the meeting at 11:45 (UTC +10)]

17. Review of Non-Member and historical resource holders' structure

Richard Brown spoke to the Non-Member and historical resource accounts analysis presentation.

[Confidential material redacted]

18. IANA RC and NRO NC appointment positions

The EC discussed the eligibility criteria for candidates and considered the candidates for the IANA Review Committee (RC) and the NRO Number Council (NC) positions. The EC decided to postpone the appointment of the IANA RC until the December meeting.

Resolution 2020-23: The EC resolved to appoint Nicole Chan to the NRO Number Council/ASO Address Council for a one-year term from 1 January 2021 to 31 December 2021.

Motion proposed by Gaurab Raj Upadhaya; seconded by Sumon Ahmed Sabir.

Kenny Huang abstained from voting.

Action item 2020-08: The DG to contact Nicole Chan to confirm her willingness to accept the appointment.

19. Risk register

Richard Brown spoke to the risk register presentation. The EC discussed the top six risks and considered some suggested changes to the current risk register.

Action item 2020-09: The Secretariat to update the risk register.

Richard Brown also provided an update on APNIC's response in relation to COVID-19.

20. Any other business

a. WIC membership

The DG informed the EC that he has received an invitation to join as a founding member of the World Internet Conference (WIC). There were no objections from the EC. The DG will accept the invitation to join the WIC.

Action item 2020-10: The DG to sign APNIC up as a founding member of the WIC.

b. Eligibility for community leadership elections

The EC discussed the criteria for community leadership elections. The EC noted that the candidates must fulfil the voting criteria before they can be nominated in SIG Chairs, NRO NC and IANA RC elections. The EC asked the Secretariat to document the nomination criteria that records the EC's intent in this matter.

Action item 2020-11: The Secretariat to document the nomination criteria for EC consideration at the next EC meeting.

21. Next EC meeting

The next EC meeting is tentatively scheduled for 23-25 November 2020.

Meeting closed at 14:15 (UTC +10), Friday, 11 September 2020

Attachments:

- A. Register of interests**
- B. [Confidential information redacted]**
- C. July 2020 finance presentation**
- D. July 2020 monthly financial report**
- E. July 2020 Credit Suisse investment report**
- F. July 2020 Credit Suisse commentary**
- G. APNIC Survey 2020 report**
- H. APNIC Survey 2020 report presentation**
- I. Secretariat report and presentation**
- J. [Confidential information redacted]**
- K. APNIC 50 AMM draft agenda**
- L. [Confidential information redacted]**
- M. APNIC Foundation update presentation**
- N. APNIC 50 NRO NC election procedures**
- O. APNIC 50 statistics presentation**
- P. [Confidential information redacted]**
- Q. [Confidential information redacted]**

Agenda Item 3

Declaration of Interests

APNIC EC Register of Interests

Declaration of interests of EC members

This register records the interests of EC members, which may conflict with the EC members' duties to APNIC. This register is accurate as at **24 August 2020**.

Gaurab Raj Upadhaya declared that he currently holds the following positions:

- Employee of Amazon Web Services (AWS/Amazon) as the Principal for Infrastructure/IP Strategy Development
- Founder of the Nepal Research and Education Network (NREN)
- Chairman of Nepal Internet Exchange (NPIX)
- Standing member of the Program Committee of APRICOT, SANOG, and Global Peering Forum
- Board Member of Internet Foundation Nepal

Kam Sze Yeung declared that he currently holds the following positions:

- Member of the HKNOG Program Committee
- Employee of Akamai Technologies, Inc
- Member of the Working Group of Peering Asia

Kenny Huang declared that he currently holds the following positions:

- Chair and CEO of TWNIC
- Board of Director, ISOC Taiwan Chapter
- Member of the Advisory Council of [DotAsia](#) Organization

Yoshinobu Matsuzaki declared that he currently holds the following positions:

- Employee of Internet Initiative Japan Inc. (IIJ) as a Senior Engineer
- Board of Director of JPNIC
- Board of Director of APNOG/APIA
- Member of JANOG Committee
- Technical Advisor of JPCERT/CC
- Contact person at IIJ Europe (RIPE member) for RIPE
- Ph.D. student of Keio University Graduate School of Media Design
- TAC (Technical Advisory Council) of Team Cymru, Inc.

Yuedong Zhang declared that he currently holds the following position:

- Employee of CNCERT/CC as Deputy Chief Engineer, under the Ministry of the Cyberspace Administration of China

Vincent Achie Atienza declared that he currently holds the following positions:

- Employee of Globe Telecom
- Chair of the Philippine Network Operators Group ([PhNOG](#))
- Board member of Internet Society Philippines (ISOC-Ph)
- Member of Ph Technical working group for IPv6 & DNSSEC

- Member of Ph Technical working group for RPKI
- Member (Ph Representative) - APIX - Asia Pacific Internet Exchange Association)
- Member/Evangelist - Philippine Open Internet eXchange ([PhOpenIX](#))

Sumon Ahmed Sabir declared that he currently holds the following positions:

- CTO, Fiber@Home Limited
- Sponsor of BDCOM Online Limited
- Member, Board of Trustee, BDIX
- Member, Board of Trustee, BDNOC
- Member, Corecom, SANOG
- Member, Board of Trustee, ISOC, Bangladesh, Dhaka Chapter

Paul Wilson declared that he currently holds the following position:

- Director of APIDTT Pty Ltd

Agenda Item 8

Financial reports

Finance Presentation APNIC EC Meeting

September 2020

Finance Presentation

- Financial Performance - YTD July 2020
- Financial Outlook for 2020 and 2021

Financial Performance

Year to date July 2020

Financial Highlights YTD July 2020

- Equity Position increased by 7% to date in 2020 ✓
- 2020 Revenue forecast close to budget ✓
- 2020 Expenses forecast 11% below budget ✓
- 2020 Operating surplus forecast at \$3.2m ✓
- YTD Cash Flow +\$1.9m in 2020 ✓
- Activity expenditure below budget estimates due to COVID-19 restrictions ✓
- New Member Growth above budget ✓

Statement of Financial Position

Amount (AUD)	31/07/2020	Year End 2019	Change	% Change
ASSETS				
Total Current Assets	12,943,607	10,508,471	2,435,136	23%
Total Non-Current Assets	35,924,018	35,186,026	737,992	2%
TOTAL ASSETS	48,867,625	45,694,497	3,173,128	7%
LIABILITIES				
Total Current Liabilities	14,697,834	13,538,676	1,159,158	9%
Total Non-Current Liabilities	1,439,394	1,431,119	8,275	1%
TOTAL LIABILITIES	16,137,228	14,969,795	1,167,433	8%
NET ASSETS/ TOTAL EQUITY	32,730,397	30,724,702	2,005,695	7%

All amounts in AUD – Australian Dollars

Statement of Financial Position

Net Equity position has increased by 7% (\$2,006k) to 31 July 2020

- Current Assets increased by 23% \$2,435k
 - Increase in cash by \$1,944k
 - Membership renewals effect on receivables increased by \$42k
 - Expenses incurred for NRO to be recovered increased by \$227k
 - Prepayment of deferred expenses increased by \$232k
- Non-Current Assets increased by 2% \$738k
 - Reduction in Property & Equipment of \$240k
 - \$1M transferred to the Investment Portfolio in July

All amounts in AUD – Australian Dollars

Statement of Financial Position

- Current Liabilities increased by 9% \$1,159k
 - Staff Leave Provisions increased by \$328k
 - Accounts Payable decreased by \$474k
 - Unearned Revenue increased by \$1,306k
 - Members Prepaid fees increased by \$1,318k
 - Prepaid Sponsorship decreased by \$12k
- Non-Current Liabilities increased by 1% \$8k
 - Long Service Leave Provisions increased by \$8k

All amounts in AUD – Australian Dollars

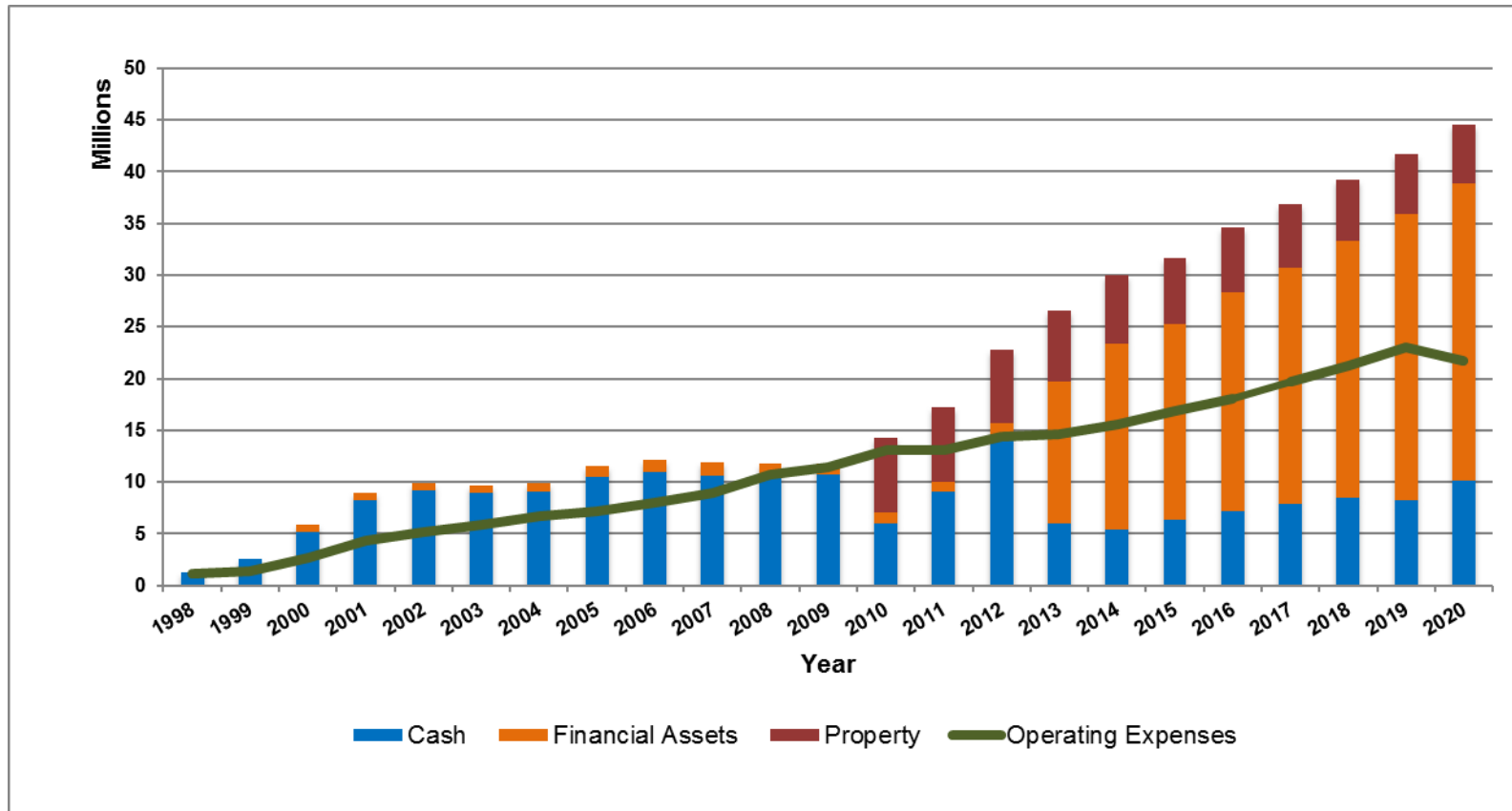
Financial Stability Measure

	YTD 2020	Actual 2019	Actual 2018
Total Equity (AUD)	\$32,730,397	\$30,724,702	\$28,820,985
% Equity covered by Cash/ Cash Equivalents	118.7%	116.9%	115.6%
Daily Operating Expenses (AUD) *	\$66,374	\$62,944	\$58,122
Number of Months of expenses covered by Equity	16.17	16.05	16.30

** Daily Operating Expenses for 2020 is calculated on the approved budget*

All amounts in AUD – Australian Dollars

APNIC Capital Reserve



All amounts in AUD – Australian Dollars

Statement of Income - Surplus

REVENUE and EXPENSES (AUD)	YTD Actual Jul 2020	YTD Actual Jul 2019	Variance %	Budget 2020	Forecast 2020	Budget Variance %
Total Revenue	14,337,913	13,491,706	6%	24,869,233	24,896,066	0%
Total Expenses	11,787,889	12,958,871	-9%	24,293,024	21,704,861	-11%
Operating Surplus/ (Deficit)	2,550,024	532,835	379%	576,209	3,191,206	454%
Fair value gain/ (loss) on financial assets	-544,329	2,161,888	-125%		-544,329	
SURPLUS/ (DEFICIT)	2,005,695	2,694,723	-26%	576,209	2,646,877	359%

Statement of Income – Revenue

REVENUE (AUD)	YTD Actual Jul 2020	YTD Actual Jul 2019	Variance %	Budget 2020	Forecast 2020	Budget Variance %
Membership fees	12,961,460	12,195,642	6%	22,625,005	22,752,915	1%
Non-members fees	153,922	150,387	2%	265,300	264,466	-0%
Reactivation fees	11,700	10,200	15%	25,000	20,119	-20%
Sign-Up fees	216,000	197,250	10%	331,750	366,228	10%
Transfer fees	103,325	92,859	11%	269,400	215,575	-20%
Sundry income	241,690	152,685	58%	387,778	376,807	-3%
Operating Revenue	13,688,097	12,799,023	7%	23,904,233	23,996,110	0%
Investment income	649,815	692,683	-6%	965,000	899,956	-7%
TOTAL REVENUE	14,337,913	13,491,706	6%	24,869,233	24,896,066	0%

All amounts in AUD – Australian Dollars

Statement of Income – Revenue

Operating Revenue tracking in line with budget

- YTD Investment income \$87k above budget, forecast to be 7% below budget at the end of 2020
- YTD Membership fees tracking in line with budget assumptions
 - New Member growth continues above budget estimates
 - 505 Actual vs 455 Budget to 31 July
 - 154 Actual vs 140 Budget to 31 July
 - Impacting on Sign-Up fees
 - 9 Reactivations
 - Around 25.4% of new Members from LDC's compared to Budget 31%
- Transfer fees tracking below YTD budget, forecast to be 20% below budget by the end of 2020.
- Sundry income tracking above YTD budget, forecast to 3% below budget, affected by:
 - Training and workshop registration receipts
 - Sponsorship receipts for the APNIC conference
 - The provision of consulting services and Foundation support
 - Support for Research activities
 - Tax Office COVID-19 Boost

YTD Fair value loss on financial assets -\$544K

Investment Fund Update

Market Value as at 31 July 2020

	Market Value
APNIC Portfolio	A\$28,693,154

Performance as of 31 July 2020

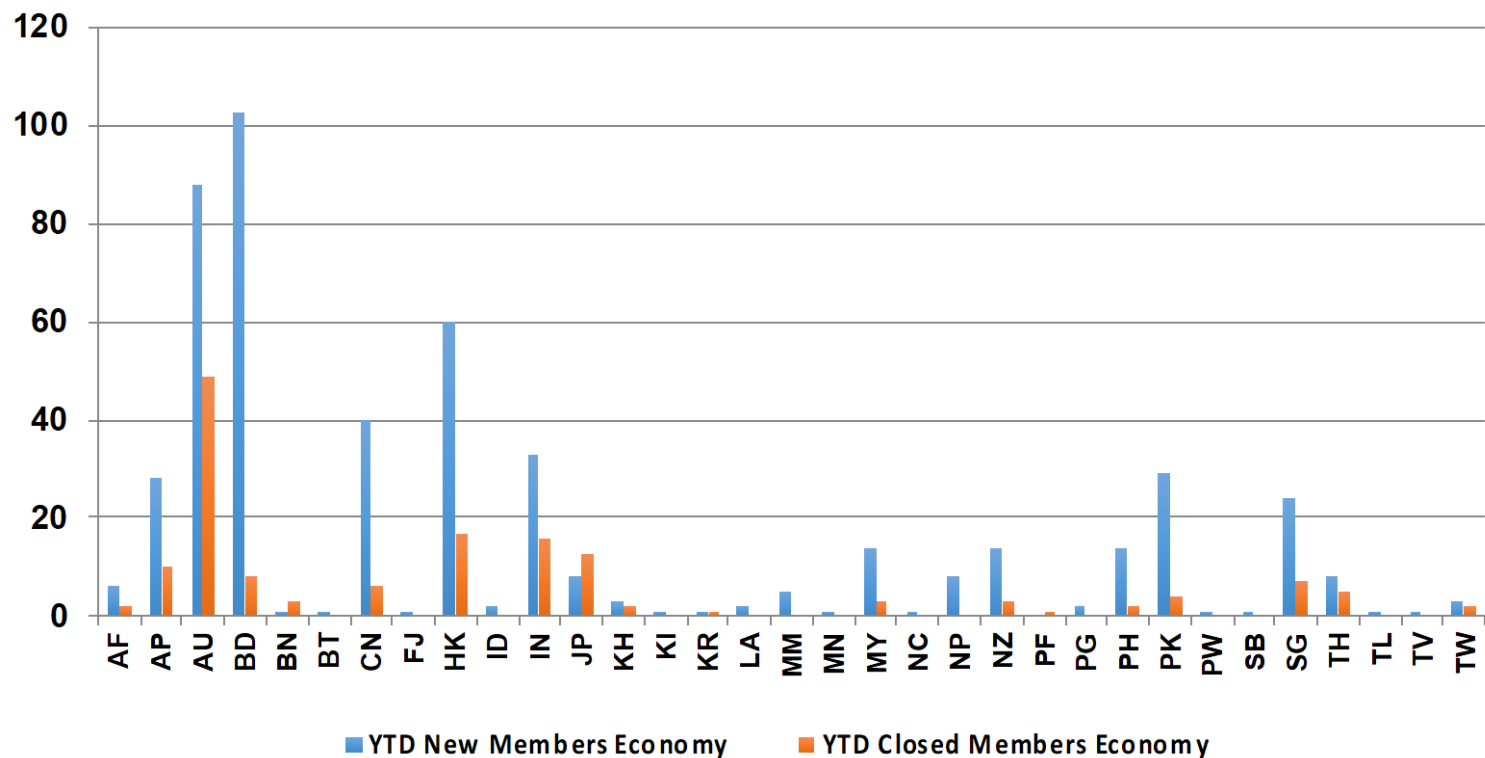
	APNIC Portfolio			
	Portfolio	Benchmark	Relative	CPI + 2.5%
Month	0.88%	0.76%	+0.12%	0.05%
3 Months	2.72%	2.70%	+0.02%	0.49%
Year To Date	-0.10%	0.33%	-0.43%	2.01%
1 Year	0.57%	1.10%	-0.53%	3.81%
3 Years pa	5.63%	5.62%	+0.01%	4.19%
Since Inception pa	5.22%	5.34%	-0.12%	4.34%

* Performance is after fees but before franking

Membership Tracking

Membership	Total Dec 2019	YTD New Jul 2020	Reactivation Adjustment	YTD Closed Jul 2020	YTD Size Change Jul 2020	Total Jul 2020	% Total
Extra Large	24	1	0	0	1	26	0%
Very Large	46	0	0	0	2	48	1%
Large	143	0	0	-3	1	141	2%
Medium	493	4	1	-5	16	509	6%
Small	3,601	79	3	-70	40	3,653	45%
Very Small	3,334	412	4	-62	-64	3,624	45%
Associate	135	9	1	-14	4	135	2%
TOTAL	7,776	505	9	-154	0	8,136	100%

Membership Growth



Membership Tracking – Closures by Economy

Economy	Breach of Agreement	Fraud	Market transfer	Membership transfer to NIR	Merger & Acquisition	Non Payment [Uncontactable]	Non Payment [Contactable]	Voluntary member closure	Grand Total	IPv4 Resources Reclaimed (/24's)	IPv6 Resources Reclaimed (/32's)	ASN Reclaimed
AF						1	1		2	7	2	2
AP					2	4		4	10	4	5	2
AU			2		16	6	9	16	49	67	12	21
BD					1	2		5	8	28	7	5
BN					2			1	3			1
CN					1	3	1	1	6	10	5	1
HK	6		4			4		3	17	29	2	8
IN			1		3	4	4	4	16	23	1	10
JP					3	8		2	13	48	1	2
KH						1		1	2	6	2	2
KR						1			1			
MY						2		1	3	2	2	3
NZ					1	1		1	3	1	0	1
PF						1			1			
PH						1		1	2	2		2
PK		1			1	1		1	4	10	1	2
SG					2	2	3		7	20	2	5
TH						3		2	5	12	4	4
TW				1		1			2			1
Grand Total	6	1	7	1	32	46	18	43	154	269	46	72

Membership Tracking – Closures by Year Joined

Year Joined	Breach of Agreement	Fraud	Market transfer	Membership transfer to NIR	Merger & Acquisition	Non Payment [Uncontactable]	Non Payment [Contactable]	Voluntary member closure	Grand Total
1999					2	1			3
2002			1						1
2003					3				3
2004					2		1		3
2005						1	1	1	3
2006					3	1	1		5
2007					3			2	5
2008					1	3	1		5
2009					1	1	1	1	4
2010					2	5		1	8
2011			1					2	3
2012					1	1		4	6
2013	1		1		2	6	1	3	14
2014			1		5	5	4	5	20
2015	1		3		3	2	1	4	14
2016	1				2	8	1	4	16
2017				1	1	5	2	5	14
2018		1			1	3	4	9	18
2019	1					4		2	7
2020	2								2
Grand Total	6	1	7	1	32	46	18	43	154

Statement of Income - Expenses

EXPENSES (AUD)	YTD Actual Jul 2020	YTD Actual Jul 2019	Variance %	Budget 2020	Forecast 2020	Budget Variance %
Bank service fees	138,324	113,292	22%	207,200	249,824	21%
Communication expenses	390,991	306,006	28%	753,550	780,214	4%
Computer expenses	715,423	628,847	14%	1,154,458	1,295,112	12%
Contribution to APNIC Foundation	373,717	428,751	-13%	750,463	670,657	-11%
Depreciation expense	434,303	499,159	-13%	862,000	756,730	-12%
Doubtful debt expenses	-6,414	13,076	-149%	25,000	4,005	-84%
ICANN contract fee	123,232	153,642	-20%	238,000	223,436	-6%
Insurance expense	140,063	125,979	11%	231,833	229,243	-1%
Meeting and training expenses	93,376	136,065	-31%	561,100	174,174	-69%
Membership fees expenses	35,094	41,310	-15%	54,029	62,253	15%
Office operating expenses	169,224	210,634	-20%	391,300	313,628	-20%
Postage & delivery	20,107	12,307	63%	39,700	46,232	16%
Printing & photocopy	22,707	20,000	14%	40,500	42,288	4%
Professional fees	861,845	956,698	-10%	2,051,021	2,100,018	2%
Recruitment expense	95,184	63,111	51%	145,000	160,000	10%
Salaries and personnel expenses	7,614,669	7,234,296	5%	13,561,230	13,564,528	0%
Sponsorship and Publicity expenses	167,182	312,016	-46%	679,640	511,013	-25%
Staff training/ Conference expenses	76,904	186,716	-59%	175,000	172,504	-1%
Translation expenses	3,007	4,162	-28%	20,000	8,007	-60%
Travel expenses	318,951	1,512,806	-79%	2,352,000	340,991	-86%
TOTAL EXPENSES	11,787,889	12,958,871	-9%	24,293,024	21,704,861	-11%

All amounts in AUD – Australian Dollars

Statement of Income - Expenses

Expenses tracking below year to date budget and is forecast to be 11% below budget at the end of 2020.

- **Salaries & Personnel expenses** – is expected to align with the full year budget
 - Resignations
 - Timing taken to recruit vacant positions
 - Timing of staff leave
- **Professional fees** are tracking below budget but are forecast to be above budget by 2% at the end of the year
 - Academy Trainer and Platform Enhancement converted to staff
 - Non-Staff Trainers and Travel activity restricted with COVID restrictions
 - Guest Speakers and other Academy budget tracking well below budget
 - Strategic Engagement Consultant budgeted as staff
 - UX and Full stack development contractors not budgeted
 - Survey translation
- **Sponsorship Fees** are tracking below budget
 - NRO Expenses will be below budget at the end of 2020, due to a large credit from 2019 and lower expenses caused by travel restrictions.
 - NOG Sponsorship and meeting related costs well below budget
- **Meeting and Training Expenses** are below budget as APNIC 50 and training activities are moved to the virtual environment, also affected are costs related to coordination group meetings, EC, ELT and other meetings. This trend will continue through until the end of 2020
- **Depreciation** is tracking below budget, a result of the timing of capital expenditure and the reduction in planned CAPEX spend
- **Office Operating expenses** tracking below the original budget caused by the office closure resulting from COVID-19 restrictions, costs savings will continue for the remainder of the year
- **Travel expenses** are below budget by \$1,053k at the end of July due to travel restrictions since March. It is not expected that travel will return to normal levels until 2021
- **Contributions to the APNIC Foundation** are tracking below budget driven by savings in travel expenses

Capital Expenditure

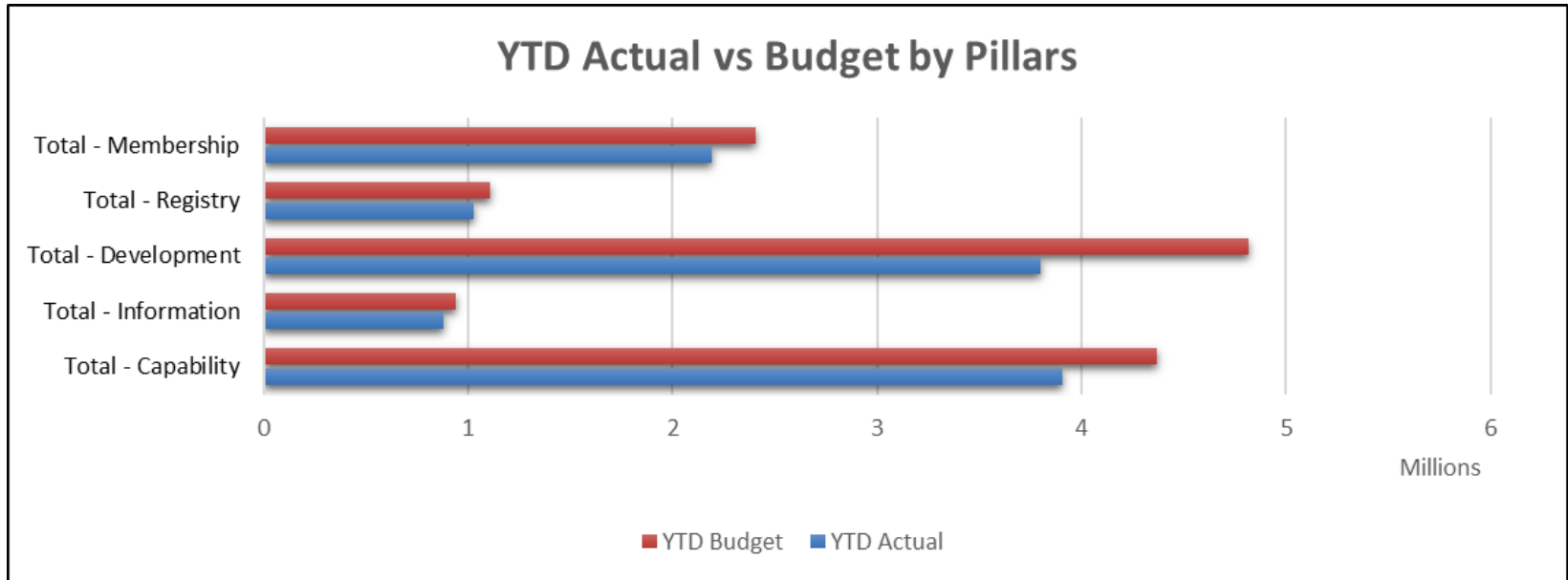
CAPITAL (AUD)	YTD Actual Jul 2020	YTD Actual Jul 2019	Variance %	Budget 2020	Forecast 2020	Budget Variance %
Equipment & Software	190,912	336,787	-43%	683,600	593,132	-13%
Office Furniture & Fittings	4,314	87,357	-95%	55,000	54,314	-1%
Total - Capital Expenditure	195,226	424,144	-54%	738,600	647,446	-12%

- Capital expenditure forecast below budget due to delay on root server deployments

Cash Flow YTD July 2020

Amount (AUD)	YTD Jul 2020
Operating Activities	
Net Income	2,005,695
Adjustments to Profit/(Loss)	
Accounts Receivable	-41,981
Other Current Asset	-448,711
Accounts Payable	-50,768
Sales Tax Payable	-22,437
Other Current Liability	1,232,363
Total Adjustments to Profit/(Loss)	668,466
Total Operating Activities	2,674,161
Investing Activities	
Fixed Asset	240,041
Other Asset	-978,033
Total Investing Activities	-737,992
Financing Activities	
Long Term Liability	8,275
Equity	0
Total Financing Activities	8,275
Net Change in Cash for Period	1,944,444
Cash at Beginning of Period	8,219,434
Cash at End of Period	10,163,878

YTD Expenses by Pillars



Expenses by Pillars and Workstreams

– YTD July

EXPENSES (AUD)	YTD Actual Jul 2020	YTD Budget Jul 2020	Variance \$	Variance %
Member services	1,267,642	1,405,046	-137,404	-10%
Membership products	652,095	635,128	16,967	3%
Membership reporting	268,653	366,830	-98,177	-27%
Total - Membership	2,188,390	2,407,004	-218,614	-9%
Registration services	363,895	363,344	551	0%
Registry products	518,557	465,101	53,456	11%
Policy development	140,318	280,255	-139,937	-50%
Total - Registry	1,022,770	1,108,700	-85,930	-8%
APNIC conferences	618,245	632,082	-13,837	-2%
Foundation support	486,814	546,516	-59,702	-11%
Community engagement	1,014,909	1,425,487	-410,578	-29%
Community participation	101,571	114,830	-13,259	-12%
APNIC academy	967,033	1,330,545	-363,512	-27%
Internet infrastructure support	607,960	768,980	-161,020	-21%
Total - Development	3,796,533	4,818,440	-1,021,908	-21%
Information products	474,646	447,177	27,469	6%
Research and analysis	402,092	490,262	-88,170	-18%
Total - Information	876,738	937,439	-60,701	-6%
Internal technical infrastructure	1,693,319	1,789,527	-96,208	-5%
Finance and business services	978,441	1,120,389	-141,948	-13%
Employee experience	792,673	961,212	-168,539	-18%
Governance	439,026	493,769	-54,743	-11%
Total - Capability	3,903,459	4,364,897	-461,438	-11%
Total - Expenses	11,787,889	13,636,480	-1,848,591	-14%

Capital Expenditure by Pillars and Workstreams – YTD July

CAPITAL EXPENSES (AUD)	YTD Actual Jul 2020	YTD Budget Jul 2020	Variance \$	Variance %
APNIC conferences		581	-581	-100%
Internet infrastructure support	7,957	230,419	-222,462	-97%
Total - Development	7,957	231,000	-223,043	-97%
Research and analysis	4,289	46,669	-42,380	-91%
Total - Information	4,289	46,669	-42,380	-91%
Internal technical infrastructure	178,666	146,769	31,897	22%
Finance and business services	4,314	32,081	-27,767	-87%
Total - Capability	182,980	178,850	4,130	2%
Total - Capital Expenses	195,226	456,519	-261,293	-57%

Financial Outlook 2020 to 2021 Draft - Work in Progress

High Level Forecast 2020/21

Background:

- The 2021 Budget and Activity Plan submission will be presented to the EC for approval at the EC retreat in early December 2020
- The APNIC Secretariat Activity Planning and budget process will commence in September for completion in late November
- The budget will include known commitments together with provisions for planned expenditure on new projects and activities

High Level Forecast 2020/21

Assumptions in this forecast:

- Membership growth continues on a similar trend to 2019/20
- Normal expenses to increase by around 2.5%
- Full year impact of expected staffing at the end of 2020
- Estimate based on travel returning to normal in July 2021
- Investment fund performs in line with recent trends
- APNIC remains at the current office

Revenue 2020/21

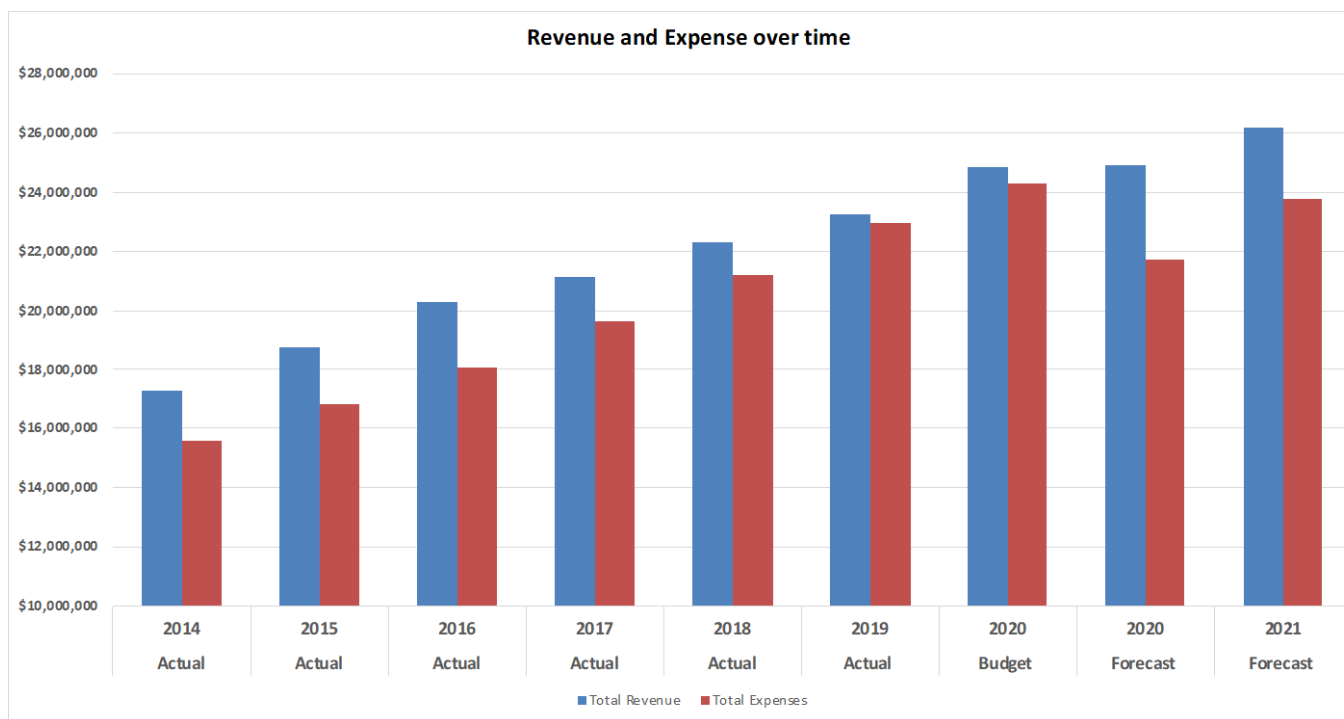
REVENUE	Actual 2014	Actual 2015	Actual 2016	Actual 2017	Actual 2018	Actual 2019	Budget 2020	Forecast 2020	Forecast 2021	Change to Budget 2020
Membership fees	15,903,111	16,933,413	18,354,898	19,310,962	20,213,860	21,061,318	22,625,005	22,752,915	24,186,348	6.9%
Non-members fees	254,706	243,049	243,923	260,010	251,054	255,751	265,300	264,466	264,466	-0.3%
Reactivation fees	67,800	37,600	37,700	27,200	22,000	16,900	25,000	20,119	20,000	-20.0%
Sign-Up fees		456,000	465,000	373,250	330,000	345,500	331,750	366,228	365,000	10.0%
Transfer fees	81,304	77,943	130,139	127,440	164,145	173,831	269,400	215,575	220,000	-18.3%
Sundry income	238,198	252,764	193,829	209,801	447,939	430,863	387,778	376,807	250,000	-35.5%
Operating Revenue	16,545,118	18,000,769	19,425,489	20,308,663	21,428,997	22,284,164	23,904,233	23,996,110	25,305,815	5.9%
Investment income	754,563	792,041	890,951	841,080	872,034	981,871	965,000	899,956	899,956	6.7%
TOTAL REVENUE	17,299,681	18,792,810	20,316,440	21,149,743	22,301,031	23,266,035	24,869,233	24,896,066	26,205,771	5.4%
Change		8.6%	8.1%	4.1%	5.4%	4.3%	6.9%	7.0%	5.4%	

Expenses 2020/21

EXPENSES	Actual 2014	Actual 2015	Actual 2016	Actual 2017	Actual 2018	Actual 2019	Budget 2020	Forecast 2020	Forecast 2021	Change to Budget 2020
Bank service fees	145,823	156,496	167,917	177,670	193,762	207,759	207,200	249,824	256,070	23.6%
Communication expenses	483,803	591,885	532,212	561,271	542,895	570,832	753,550	780,214	799,720	6.1%
Computer expenses	572,528	520,784	533,628	647,453	817,599	1,067,957	1,154,458	1,295,112	1,327,490	15.0%
Contribution to APNIC Foundation			18,003	665,058	732,710	762,179	750,463	670,657	670,657	-10.6%
Depreciation expense	765,548	764,145	785,218	807,596	856,029	862,055	862,000	756,730	775,649	-10.0%
Doubtful debt expenses	34,259	-54,293	-6,225	14,653	-1,445	24,302	25,000	4,005	4,105	-83.6%
ICANN contract fee	260,333	284,161	243,026	244,657	278,866	263,386	238,000	223,436	229,022	-3.8%
Insurance expense	129,971	131,550	128,793	173,610	189,738	206,523	231,833	229,243	234,974	1.4%
Meeting and training expenses	374,850	350,313	363,343	389,922	396,545	425,704	561,100	174,174	178,529	-68.2%
Membership fees	55,611	49,532	48,971	52,296	48,309	58,241	54,029	62,253	63,809	18.1%
Office Operating	312,744	315,608	324,948	337,207	342,458	342,806	391,300	313,628	321,469	-17.8%
Postage & delivery	22,071	51,029	41,893	40,610	42,808	35,060	39,700	46,232	47,388	19.4%
Printing & photocopy	48,508	33,807	38,165	29,311	35,605	36,145	40,500	42,288	43,346	7.0%
Professional fees	1,052,757	1,195,494	1,409,430	1,304,343	1,458,389	1,820,443	2,051,021	2,100,018	2,152,518	4.9%
Recruitment expense	144,423	119,077	94,307	134,793	185,554	95,357	145,000	160,000	242,589	67.3%
Salaries and personnel expenses	8,731,164	9,586,575	10,459,153	11,096,470	11,962,294	12,789,661	13,561,230	13,564,528	14,242,754	5.0%
Sponsorship and Publicity expenses	340,946	575,775	624,179	681,342	759,741	627,766	679,640	511,013	523,789	-22.9%
Staff training/ Conference expenses	135,996	169,122	164,441	148,603	199,349	381,567	175,000	172,504	176,817	1.0%
Translation expenses	1,623	2,883	11,147	9,027	7,855	6,668	20,000	8,007	8,207	-59.0%
Travel expenses	1,955,471	1,961,551	2,085,745	2,161,034	2,165,459	2,390,238	2,352,000	340,991	1,500,000	-36.2%
TOTAL EXPENSES	15,568,431	16,805,493	18,068,294	19,676,928	21,214,519	22,974,649	24,293,024	21,704,861	23,798,901	-2.0%
Change		7.9%	7.5%	8.9%	7.8%	8.3%	5.7%	-5.5%	-2.0%	
Other Expenses		7,218,918	7,609,141	8,580,458	9,252,225	10,184,988	10,731,794	8,140,333	9,556,147	

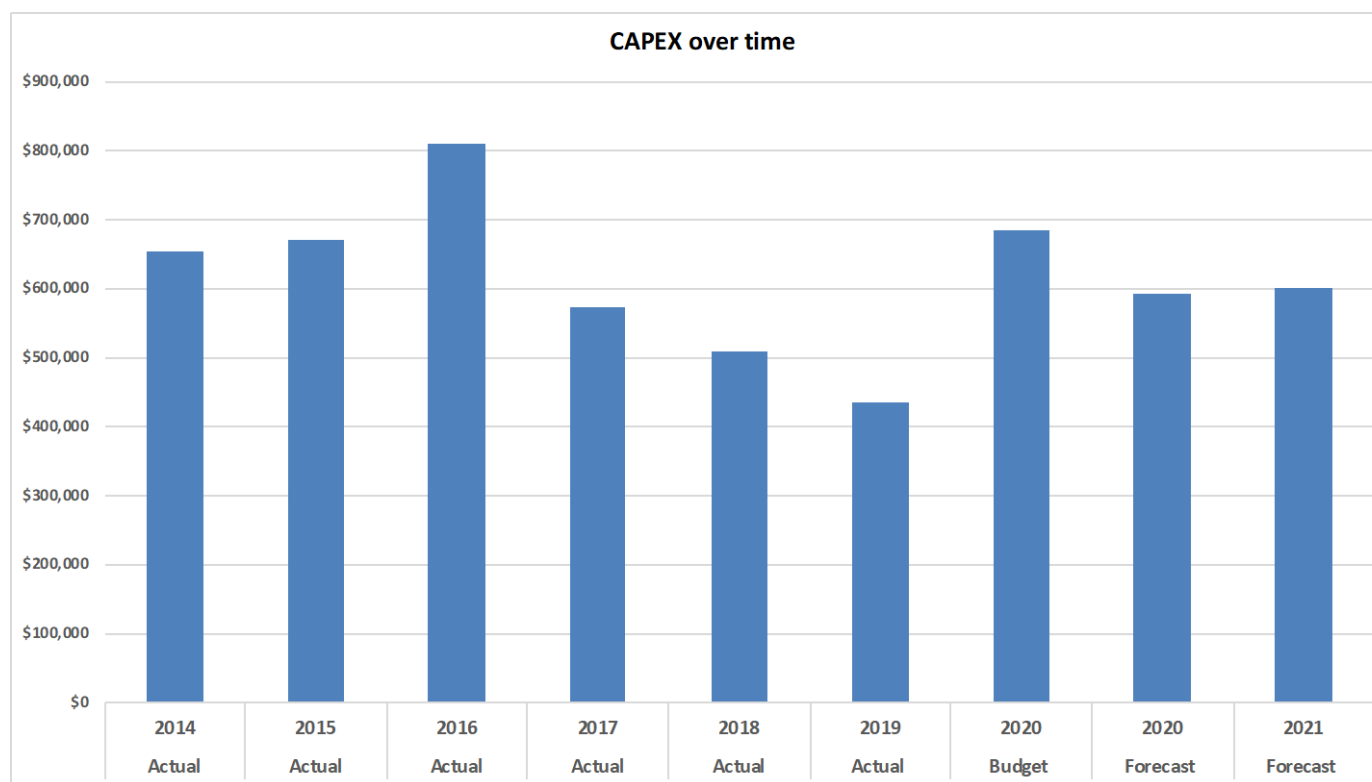
Surplus/Deficit

REVENUE and EXPENSES (AUD)	Actual 2014	Actual 2015	Actual 2016	Actual 2017	Actual 2018	Actual 2019	Budget 2020	Forecast 2020	Forecast 2021	Change to Budget 2020
Total Revenue	17,299,681	18,792,810	20,316,440	21,149,743	22,301,031	23,266,035	24,869,233	24,896,066	26,205,771	5.4%
Total Expenses	15,568,431	16,805,493	18,068,294	19,676,928	21,214,519	22,974,649	24,293,024	21,704,861	23,798,901	-2.0%
Operating Surplus	1,731,251	1,987,317	2,248,146	1,472,815	1,086,512	291,386	576,209	3,191,206	2,406,869	317.7%
Fair value surplus/loss on financial assets					-73,475	2,169,284				
SURPLUS	1,731,251	1,987,317	2,248,146	1,472,815	1,013,037	2,460,670	576,209	3,191,206	2,406,869	317.7%
Income Tax (expense)/benefit	34,609	-12,777	18,217	82,284	99,935	-566,953				
SURPLUS	1,765,859	1,974,540	2,266,363	1,555,099	1,112,972	1,903,717	576,209	3,191,206	2,406,869	317.7%



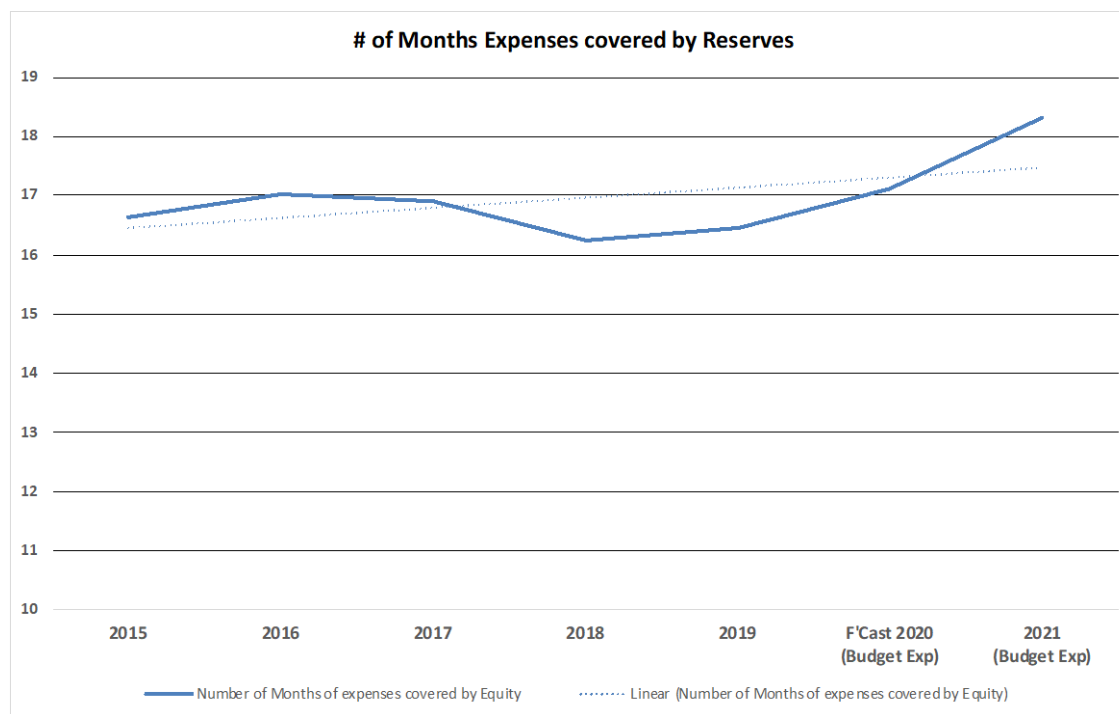
CAPEX Outlook 2020/21

CAPITAL (AUD)	Actual 2014	Actual 2015	Actual 2016	Actual 2017	Actual 2018	Actual 2019	Budget 2020	Forecast 2020	Forecast 2021	Change to Budget 2020
Equipment & Software	653,998	671,551	809,626	572,206	510,658	435,488	683,600	593,132	600,000	-12.2%
Office Furniture & Fittings	31,728	36,731	12,136	110,211	91,273	112,879	55,000	54,314	75,000	36.4%
Total - Capital Expenditure	685,725	708,282	821,762	682,417	601,930	548,368	738,600	647,446	675,000	-8.6%
Change		3.3%	16.0%	-17.0%	-11.8%	-8.9%	34.7%	-12.3%	4.3%	



Performance against Reserve Target

Analysis of Reserves							
	2015	2016	2017	2018	2019	F'Cast 2020 (Budget Exp)	2021 (Budget Exp)
Total Equity (AUD)	\$23,319,460	\$25,647,507	\$27,708,013	\$28,851,683	\$31,479,015	\$34,670,221	\$37,077,090
Forecast/Budget/Actual Daily Operating Expenses	\$46,077	\$49,430	\$53,909	\$58,122	\$62,944	\$66,556	\$66,556
Number of Months of expenses covered by Equity	16.64	17.01	16.90	16.25	16.44	17.13	18.31



Questions?

Monthly Financial Report

(in AUD)

July 2020

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1 Executive Summary

This report provides the financial status at the end of July 2020 and includes comparisons to the budget, and last year's YTD and full year forecast results. The year to date operating surplus (before fair value loss on financial assets) is \$2,550k.

The latest forecast shows the operating surplus will be around \$3.2m, i.e. 454% more than the budget, with the overall net surplus after the fair value loss on investment portfolio will be at \$2.6m, i.e. 359% higher than budget.

Statement of Financial position (Table 1)

Equity has increased by 7%, driven by an increase in the cash position, a result of a strong surplus to date due to significant expense reductions resulting from COVID-19 restrictions.

Statement of Income (Table 2)

Revenue is forecast to be close to budget at the end of 2020 with membership growth in line with budget assumptions.

- **Membership fees:** New members up to the end of July was 505, above the budget of 455. This is also reflected in higher **Sign-Up fees**. There were 154 closures compared to the budget assumption of 140.
- **Investment income:** The APNIC portfolio was positive again in July, up 0.88% for the month. Australian equities advanced 0.50%. AUD bonds were up 0.37%. Since inception in August 2013, the portfolio has returned 5.22% (after fees) against the benchmark (CPI +2.5%) of 4.34%.
- **Sundry income – COVID-19 travel restrictions** have impacted heavily on the revenue from training and conference events in 2020. There is however some additional revenue received from the not-for-profit business stimulus package provided by the Australian Government as part of the response to the impact of COVID-19.

Operating Expenses are forecast to be more than \$2M lower than the budget. COVID-19 restrictions have had a significant effect on travel activity and expenses, meeting and training expenses and sponsorship. Some of these savings will be offset by expenditure in computer expenses, recruitment, and professional fees to bring forward the work on planned initiatives in 2020.

The forecast for travel expenses assumes that travel will not recommence in 2020, it is still unclear when normal travel activity will resume.

Fair Value Gain/ (Loss) As outlined in Investment income above, the APNIC portfolio continued to rebound in July as COVID-19 containment measures eased. The value of APNIC's investment portfolio has decreased since the beginning of 2020 by \$544k, recovering from a decrease of \$1.26M recorded up to the end of March.

Capital Expenditure (Table 3)

Capital Expenditure is currently tracking below budget. This trend will continue, and it will continue to track below budget as the year progresses. The major variances relate to root server deployments that have been delayed because of the COVID-19 restrictions.

2 Statement of Financial Position

Amount (AUD)	31/07/2020	Year End 2019	% Change
CURRENT ASSETS			
Cash/ Term deposits	10,163,878	8,219,434	24%
Receivables	1,704,390	1,445,486	18%
Others	1,075,339	843,550	27%
TOTAL CURRENT ASSETS	12,943,607	10,508,471	23%
NON-CURRENT ASSETS			
Other financial assets	28,680,874	27,702,841	4%
Property, plant and equipment	6,909,382	7,149,423	-3%
Deferred tax assets	333,762	333,762	0%
TOTAL NON-CURRENT ASSETS	35,924,018	35,186,026	2%
TOTAL ASSETS	48,867,625	45,694,497	7%
CURRENT LIABILITIES			
Payables	692,781	1,167,175	-41%
Provisions	2,129,456	1,801,421	18%
Unearned revenue	11,875,597	10,570,081	12%
TOTAL CURRENT LIABILITIES	14,697,834	13,538,676	9%
NON - CURRENT LIABILITIES			
Deferred tax liabilities	1,054,491	1,054,491	0%
Total provisions	384,903	376,628	2%
TOTAL NON-CURRENT LIABILITIES	1,439,394	1,431,119	1%
TOTAL LIABILITIES	16,137,228	14,969,795	8%
NET ASSETS	32,730,397	30,724,702	7%
EQUITY			
Share capital	1	1	0%
Retained earnings	30,724,701	28,820,984	7%
Net Income	2,005,695	1,903,717	5%
TOTAL EQUITY	32,730,397	30,724,702	7%

Table 1. Statement of Financial Position

3 Statement of Income

Amount (AUD)	YTD Actual Jul 2020	YTD Actual Jul 2019	Variance %	Budget 2020	Forecast 2020	Budget Variance %
Membership fees	12,961,460	12,195,642	6%	22,625,005	22,752,915	1%
Non-members fees	153,922	150,387	2%	265,300	264,466	-0%
Reactivation fees	11,700	10,200	15%	25,000	20,119	-20%
Sign-Up fees	216,000	197,250	10%	331,750	366,228	10%
Transfer fees	103,325	92,859	11%	269,400	215,575	-20%
Sundry income	241,690	152,685	58%	387,778	376,807	-3%
Operating Revenue	13,688,097	12,799,023	7%	23,904,233	23,996,110	0%
Investment income	649,815	692,683	-6%	965,000	899,956	-7%
TOTAL REVENUE	14,337,913	13,491,706	6%	24,869,233	24,896,066	0%
Bank service fees	138,324	113,292	22%	207,200	249,824	21%
Communication expenses	390,991	306,006	28%	753,550	780,214	4%
Computer expenses	715,423	628,847	14%	1,154,458	1,295,112	12%
Contribution to APNIC Foundation	373,717	428,751	-13%	750,463	670,657	-11%
Depreciation expense	434,303	499,159	-13%	862,000	756,730	-12%
Doubtful debt expenses	-6,414	13,076	-149%	25,000	4,005	-84%
ICANN contract fee	123,232	153,642	-20%	238,000	223,436	-6%
Insurance expense	140,063	125,979	11%	231,833	229,243	-1%
Meeting and training expenses	93,376	136,065	-31%	561,100	174,174	-69%
Membership fees expenses	35,094	41,310	-15%	54,029	62,253	15%
Office operating expenses	169,224	210,634	-20%	391,300	313,628	-20%
Postage & delivery	20,107	12,307	63%	39,700	46,232	16%
Printing & photocopy	22,707	20,000	14%	40,500	42,288	4%
Professional fees	861,845	956,698	-10%	2,051,021	2,100,018	2%
Recruitment expense	95,184	63,111	51%	145,000	160,000	10%
Salaries and personnel expenses	7,614,669	7,234,296	5%	13,561,230	13,564,528	0%
Sponsorship and Publicity expenses	167,182	312,016	-46%	679,640	511,013	-25%
Staff training/ Conference expenses	76,904	186,716	-59%	175,000	172,504	-1%
Translation expenses	3,007	4,162	-28%	20,000	8,007	-60%
Travel expenses	318,951	1,512,806	-79%	2,352,000	340,991	-86%
TOTAL EXPENSES	11,787,889	12,958,871	-9%	24,293,024	21,704,861	-11%
Operating Surplus/ (Deficit)	2,550,024	532,835	379%	576,209	3,191,206	454%
Fair value gain/ (loss) on financial assets	-544,329	2,161,888	-125%		-544,329	
SURPLUS/ (DEFICIT)	2,005,695	2,694,723	-26%	576,209	2,646,877	359%

Table 2. Statement of Income

4 Capital Expenditure

CAPITAL (AUD)	YTD Actual Jul 2020	YTD Actual Jul 2019	Variance %	Budget 2020	Forecast 2020	Budget Variance %
Equipment & Software	190,912	336,787	-43%	683,600	593,132	-13%
Office Furniture & Fittings	4,314	87,357	-95%	55,000	54,314	-1%
Total - Capital Expenditure	195,226	424,144	-54%	738,600	647,446	-12%

Table 3. Capital Expenditure by Category

5 Activity Reporting

5.1 Operating Expenses by Pillar and Workstream

EXPENSES (AUD)	YTD Actual Jul 2020	YTD Budget Jul 2020	Variance \$	Variance %
Member services	1,267,642	1,405,046	-137,404	-10%
Membership products	652,095	635,128	16,967	3%
Membership reporting	268,653	366,830	-98,177	-27%
Total - Membership	2,188,390	2,407,004	-218,614	-9%
Registration services	363,895	363,344	551	0%
Registry products	518,557	465,101	53,456	11%
Policy development	140,318	280,255	-139,937	-50%
Total - Registry	1,022,770	1,108,700	-85,930	-8%
APNIC conferences	618,245	632,082	-13,837	-2%
Foundation support	486,814	546,516	-59,702	-11%
Community engagement	1,014,909	1,425,487	-410,578	-29%
Community participation	101,571	114,830	-13,259	-12%
APNIC academy	967,033	1,330,545	-363,512	-27%
Internet infrastructure support	607,960	768,980	-161,020	-21%
Total - Development	3,796,533	4,818,440	-1,021,908	-21%
Information products	474,646	447,177	27,469	6%
Research and analysis	402,092	490,262	-88,170	-18%
Total - Information	876,738	937,439	-60,701	-6%
Internal technical infrastructure	1,693,319	1,789,527	-96,208	-5%
Finance and business services	978,441	1,120,389	-141,948	-13%
Employee experience	792,673	961,212	-168,539	-18%
Governance	439,026	493,769	-54,743	-11%
Total - Capability	3,903,459	4,364,897	-461,438	-11%
Total - Expenses	11,787,889	13,636,480	-1,848,591	-14%

Table 4. Expense by Activity Pillars and Workstreams

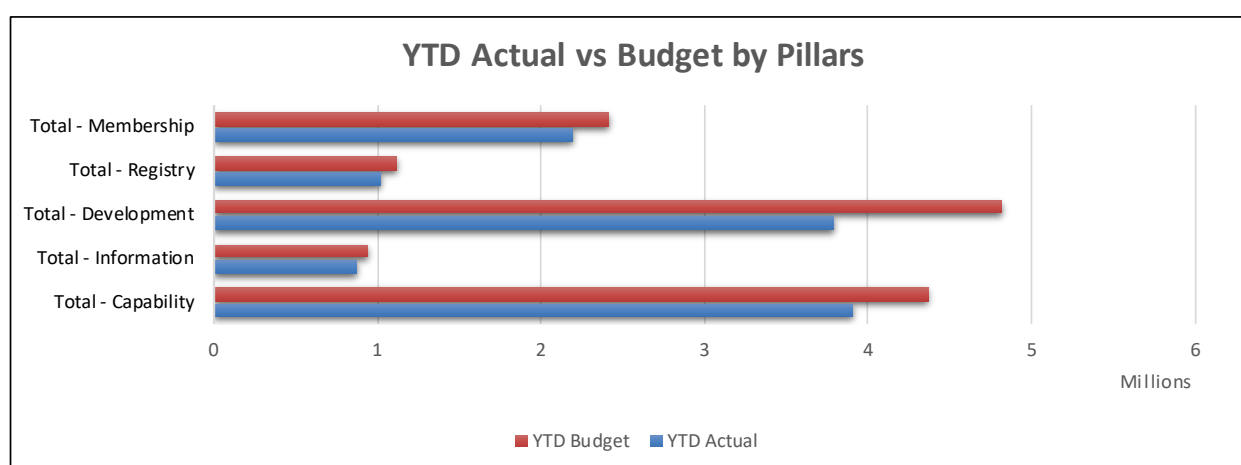


Figure 1. YTD Actual vs. Budget by Pillar

5.2 Capital Expenditure by Pillar and Workstream

CAPITAL EXPENSES (AUD)	YTD Actual Jul 2020	YTD Budget Jul 2020	Variance \$	Variance %
APNIC conferences		581	-581	-100%
Internet infrastructure support	7,957	230,419	-222,462	-97%
Total - Development	7,957	231,000	-223,043	-97%
Research and analysis	4,289	46,669	-42,380	-91%
Total - Information	4,289	46,669	-42,380	-91%
Internal technical infrastructure	178,666	146,769	31,897	22%
Finance and business services	4,314	32,081	-27,767	-87%
Total - Capability	182,980	178,850	4,130	2%
Total - Capital Expenses	195,226	456,519	-261,293	-57%

Table 5. Capital Expenditure by Pillar and Workstream

6 APNIC Reserve

6.1 Cash Flow Statement

Amount (AUD)	YTD Jul 2020
Operating Activities	
Net Income	2,005,695
Adjustments to Profit/(Loss)	
Accounts Receivable	-41,981
Other Current Asset	-448,711
Accounts Payable	-50,768
Sales Tax Payable	-22,437
Other Current Liability	1,232,363
Total Adjustments to Profit/(Loss)	668,466
Total Operating Activities	2,674,161
Investing Activities	
Fixed Asset	240,041
Other Asset	-978,033
Total Investing Activities	-737,992
Financing Activities	
Long Term Liability	8,275
Equity	0
Total Financing Activities	8,275
Net Change in Cash for Period	1,944,444
Cash at Beginning of Period	8,219,434
Cash at End of Period	10,163,878

Table 6. Cash Flow Statement

6.2 Capital Reserve

The Reserve is diversified between Cash Investments, Investment Portfolio, and Property (APNIC Office). Addition fund of \$1m has been invested into portfolio in July. At the end of July, APNIC maintained \$10.2M in cash reserves, \$28.7M has been invested in the investment portfolio and \$5.7M invested in Property. Figure 2 below tracks the value and the allocation of these reserves over time and tracks the operating expenses for each year for comparison:

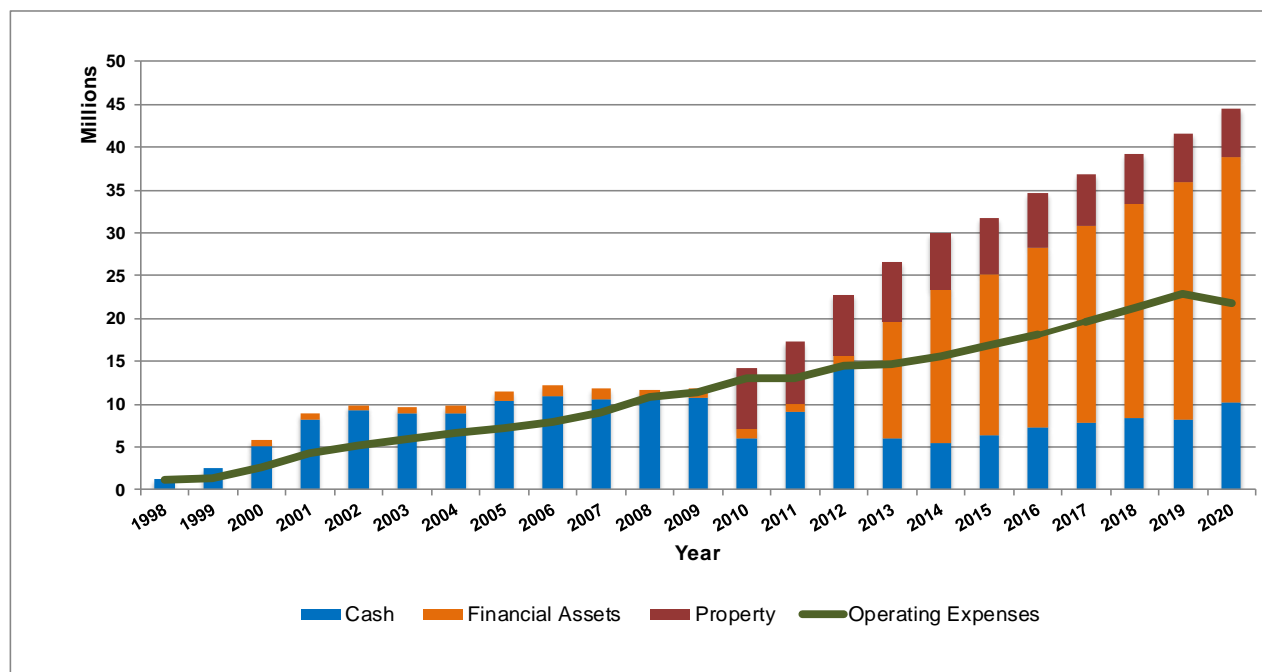


Figure 2. APNIC Reserves

6.3 APNIC's Equity and Reserves

By comparing the YTD Total Equity (including retained earnings and unrealised capital gains), the Daily Operating Expenses based on the approved budget *, the number of month's coverage of operational expenses is set out below:

	YTD 2020	Actual 2019	Actual 2018
Total Equity (AUD)	\$32,730,397	\$30,724,702	\$28,820,985
% Equity covered by Cash/ Cash Equivalents	118.7%	116.9%	115.6%
Daily Operating Expenses (AUD) *	\$66,374	\$62,944	\$58,122
Number of Months of expenses covered by Equity	16.17	16.05	16.30

Table 7. Equity and Reserves

7 Membership

7.1 Membership by Category

Membership	Total Dec 2019	YTD New Jul 2020	Reactivation Adjustment	YTD Closed Jul 2020	YTD Size Change Jul 2020	Total Jul 2020	% Total
Extra Large	24	1	0	0	1	26	0%
Very Large	46	0	0	0	2	48	1%
Large	143	0	0	-3	1	141	2%
Medium	493	4	1	-5	16	509	6%
Small	3,601	79	3	-70	40	3,653	45%
Very Small	3,334	412	4	-62	-64	3,624	45%
Associate	135	9	1	-14	4	135	2%
TOTAL	7,776	505	9	-154	0	8,136	100%

Table 8. Membership by Category

7.2 Membership Growth

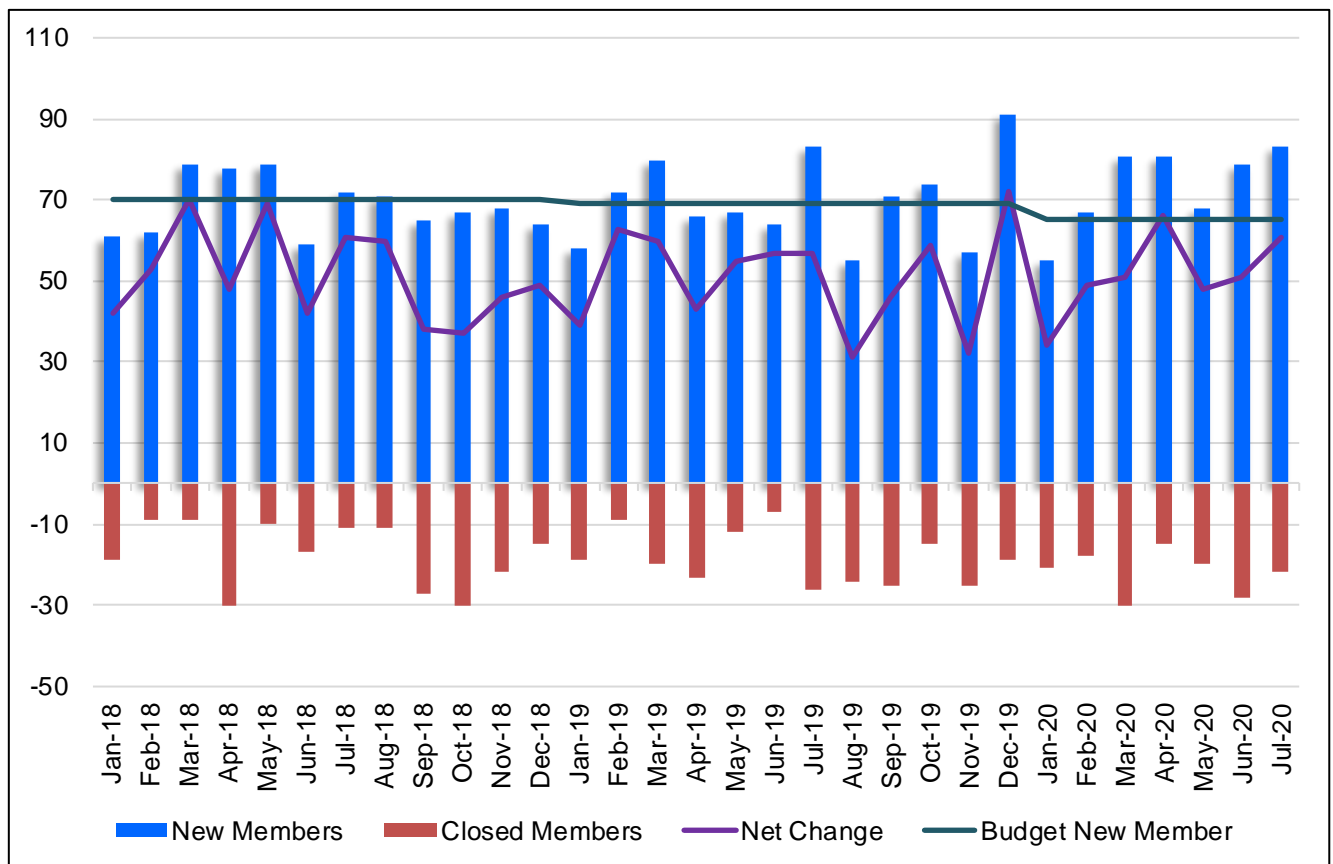


Figure 3. Membership Growth Analysis

7.3 Year-to-Date Membership Movement by Economy

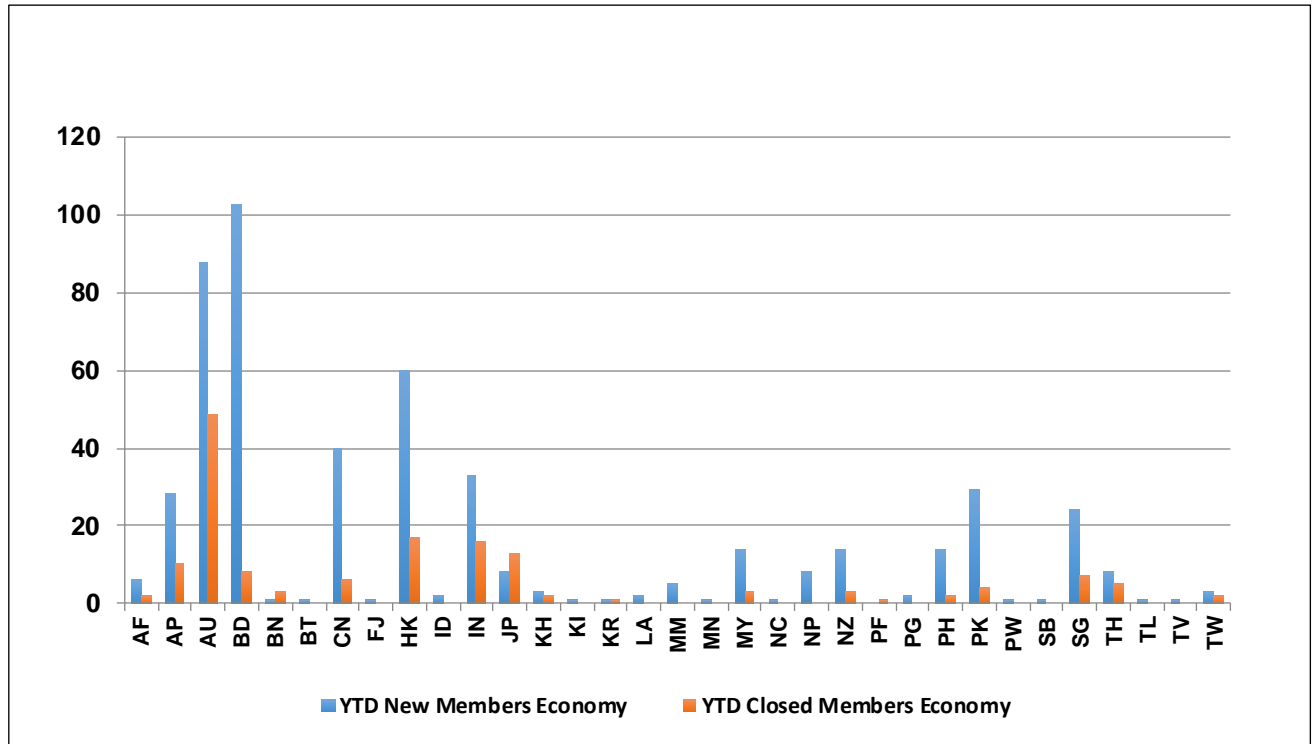


Figure 4. New and Closed Members Analysis

7.4 Membership Closures by Year Joined

Year Joined	Breach of Agreement	Fraud	Market transfer	Membership transfer to NIR	Merger & Acquisition	Non Payment [Uncontactable]	Non Payment [Contactable]	Voluntary member closure	Grand Total
1999					2	1			3
2002			1						1
2003					3				3
2004					2		1		3
2005						1	1	1	3
2006					3	1	1		5
2007					3			2	5
2008					1	3	1		5
2009					1	1	1	1	4
2010					2	5		1	8
2011			1					2	3
2012					1	1		4	6
2013	1		1		2	6	1	3	14
2014			1		5	5	4	5	20
2015	1		3		3	2	1	4	14
2016	1				2	8	1	4	16
2017				1	1	5	2	5	14
2018		1			1	3	4	9	18
2019	1					4		2	7
2020	2								2
Grand Total	6	1	7	1	32	46	18	43	154

Table 9. Membership Closure by Year Joined

7.5 Membership Closures by Economy

Economy	Breach of Agreement	Fraud	Market transfer	Membership transfer to NIR	Merger & Acquisition	Non Payment [Uncontactable]	Non Payment [Contactable]	Voluntary member closure	Grand Total	IPv4 Resources Reclaimed (/24's)	IPv6 Resources Reclaimed (/32's)	ASN Reclaimed
AF						1	1		2	7	2	2
AP					2	4		4	10	4	5	2
AU			2		16	6	9	16	49	67	12	21
BD					1	2		5	8	28	7	5
BN					2			1	3			1
CN					1	3	1	1	6	10	5	1
HK	6		4			4		3	17	29	2	8
IN			1		3	4	4	4	16	23	1	10
JP					3	8		2	13	48	1	2
KH						1		1	2	6	2	2
KR						1			1			
MY						2		1	3	2	2	3
NZ					1	1		1	3	1	0	1
PF						1			1			
PH						1		1	2	2		2
PK		1			1	1		1	4	10	1	2
SG					2	2	3		7	20	2	5
TH						3		2	5	12	4	4
TW				1		1			2			1
Grand Total	6	1	7	1	32	46	18	43	154	269	46	72

Table 10. Membership Closure by Economy



Private Banking

Investment Report 1.7.2020 – 31.7.2020

APNIC PTY LTD

Portfolio: 3000039-70



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Private Banking

Investment Report 1.7.2020 – 31.7.2020

Portfolio **3000039-70**

In the Name of APNIC PTY LTD

Produced on 5.8.2020
Reporting Currency AUD

Relationship Manager Patrick Armitage
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Scope of Analysis
 as of 31.7.2020

Components	Portfolio	Asset Value in AUD	Discretionary Mandate	Opened	Closed	Performance Activation	Performance Deactivation
Investment related Positions							
AUD Portfolio	3000039-70	28,680,874	Yes	16.08.2013		31.12.2013	
Total Wealth		28,680,874					

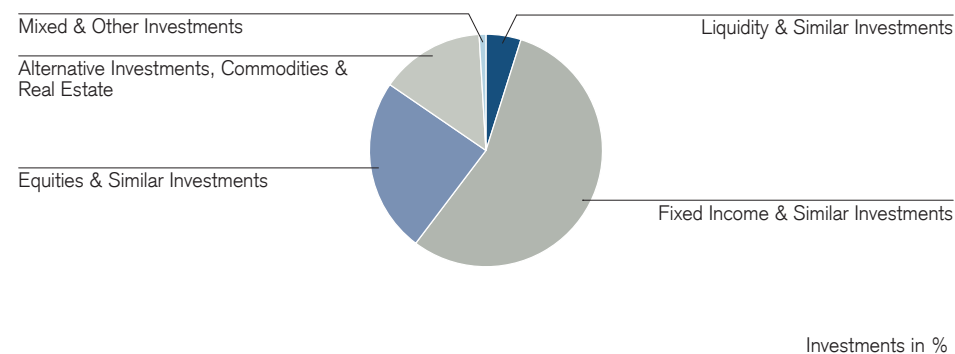
1. Overview

1.1. Asset Allocation

Asset Allocation by Asset Category

Period 1.7.2020 - 31.7.2020

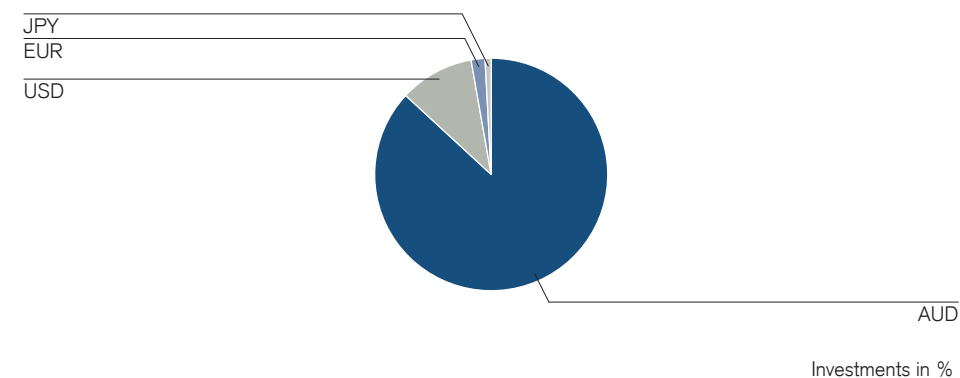
	Beginning Market Value in AUD	Change	Ending Market Value in AUD	Ending Market Value Prop.
■ Liquidity & Similar Investments	860,488	533,055	1,393,543	4.86%
■ Fixed Income & Similar Investments	15,211,872	686,855	15,898,727	55.43%
■ Equities & Similar Investments	6,579,438	387,117	6,966,555	24.29%
■ Alternative Investments, Commodities & Real Estate	4,661,316	-508,925	4,152,391	14.48%
■ Mixed & Other Investments	134,392	135,266	269,658	0.94%
Total Investments	27,447,506		28,680,874	100.00%



Asset Allocation by Currency

Period 1.7.2020 - 31.7.2020

	Beginning Market Value in AUD	Change	Ending Market Value in AUD	Ending Market Value Prop.
■ AUD - Australian Dollar	24,369,227	549,774	24,919,001	86.88%
■ USD - US Dollar	2,186,686	779,676	2,966,362	10.34%
■ EUR - Euro	639,483	-89,054	550,429	1.92%
■ JPY - Japan Yen	201,058	44,025	245,082	0.85%
■ GBP - Pound Sterling	51,053	-51,053	0	
Total Investments	27,447,506		28,680,874	100.00%



1.2. Income and Activity

Income Summary

Period 1.7.2020 - 31.7.2020

	Current Period in AUD	Year to Date in AUD
Cash Dividend	294,661	564,332
Coupon Received/Paid	13,171	37,826
Interest Earned	45	2,938
Interest Paid	0	0
Net Income	307,877	605,096

Activity Summary

Period 1.7.2020 - 31.7.2020

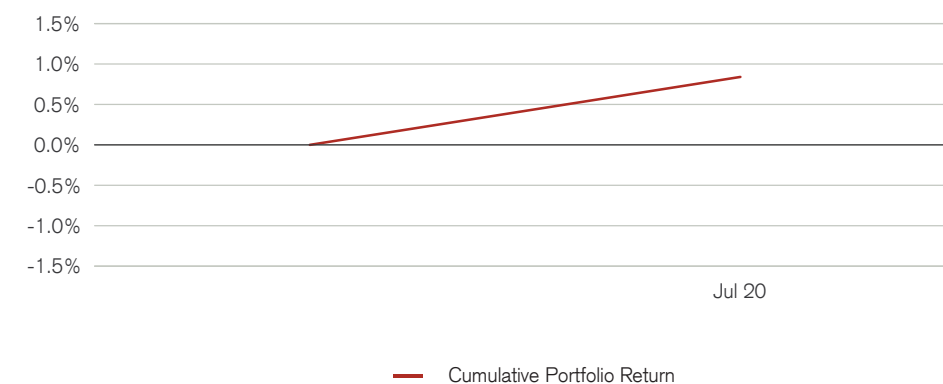
	Current Period in AUD	Year to Date in AUD
Asset Inflows	1,000,000	1,000,000
Asset Outflows	0	0
Net Investment Asset Flows	1,000,000	1,000,000
Net Non-Investment Flows	0	0

1.3. Performance

Performance Summary

Period 1.7.2020 - 31.7.2020

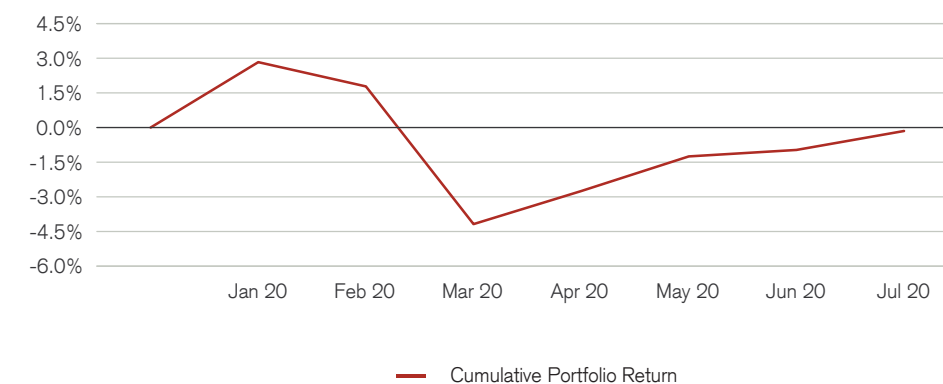
	Asset Value in AUD	Asset Value in AUD
Ending Market Value		28,680,874
Beginning Market Value		27,447,506
Asset Flows including		1,000,000
Inflows	1,000,000	
Outflows	0	
Net Non-Investment Flows	0	
Taxes	0	
Flow Adjusted Value Change		233,368
Cumulative Portfolio Return – net		0.84%



Performance Year-to-date

Period 1.1.2020 - 31.7.2020

	Asset Value in AUD	Asset Value in AUD
Ending Market Value		28,680,874
Beginning Market Value		27,725,032
Asset Flows including		992,479
Inflows	1,000,000	
Outflows	0	
Net Non-Investment Flows	0	
Taxes	-7,521	
Flow Adjusted Value Change		-36,637
Cumulative Portfolio Return – net		-0.15%



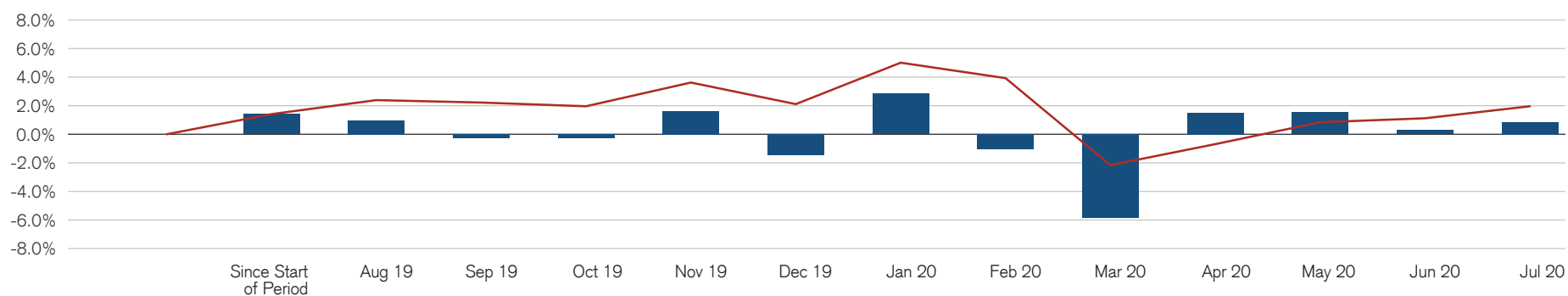
2. Analyses

2.1. Performance

Performance Details

Period 1.7.2019 - 31.7.2020

	Since Start of Period	Aug 19	Sep 19	Oct 19	Nov 19	Dec 19	Jan 20	Feb 20	Mar 20	Apr 20	May 20	Jun 20	Jul 20
Ending Market Value	27,542,976	27,808,588	27,758,521	27,687,497	28,138,498	27,725,032	28,510,970	28,219,493	26,561,105	26,959,853	27,374,714	27,447,506	28,680,874
Beginning Market Value	27,159,199	27,542,976	27,808,588	27,758,521	27,687,497	28,138,498	27,725,032	28,510,970	28,219,493	26,561,105	26,959,853	27,374,714	27,447,506
Asset Flows including	0	0	-3,746	0	0	-3,803	0	0	-3,846	0	0	-3,675	1,000,000
Inflows	0	0	0	0	0	0	0	0	0	0	0	0	1,000,000
Outflows	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Non-Investment Flows	0	0	0	0	0	0	0	0	0	0	0	0	0
Taxes	0	0	-3,746	0	0	-3,803	0	0	-3,846	0	0	-3,675	0
Flow Adjusted Value Change	383,777	265,613	-46,321	-71,024	451,001	-409,663	785,937	-291,476	-1,654,543	398,749	414,860	76,468	233,368
■ Portfolio Return – net	1.41%	0.96%	-0.17%	-0.26%	1.63%	-1.46%	2.83%	-1.02%	-5.86%	1.50%	1.54%	0.28%	0.84%
— Cumulative Portfolio Return	1.41%	2.39%	2.22%	1.96%	3.62%	2.11%	5.01%	3.93%	-2.16%	-0.69%	0.84%	1.12%	1.96%



3. Positions

3.1. Investment Related Positions

as of 31.7.2020

Number/ Nominal	Description	Identification ISIN Valoren Number Ticker	Cost Valuation Price Exchange Rate	Current Valuation Price/ Type Date	Value in AUD of which Accrued Interest Proportion in %	Profit/ Loss Unrealized in AUD of which Instrument of which Forex	P/L Unreal. in % Instr. in % FX in %
Liquidity & Similar Investments							
Accounts							
AUD	1,418,335.05	Current Account -20300003970945	1.0000		1,418,335		
					4.95%		
EUR	-5,068.31	Current Account -20300003970056	1.0000		-8,355	-15	-0.18%
			1.6456 EUR/AUD		-0.03%	-15	-0.18%
USD	-11,857.28	Current Account -20300003970780	1.0000		-16,423	172	1.04%
			0.7145 AUD/USD		-0.06%	172	1.04%
Total Accounts					1,393,556		
					0		
					4.86%		
FX Spots, Forwards and Swaps							
USD	6,778.63	AUD/USD purchase / Trade Date 31.07.2020 Value Date 04.08.2020	0.7209 AUD/USD	0.7220 AUD/USD 31.07.2020	-13	-13	-13
Total FX Spots, Forwards and Swaps					-13		
					0		
Total Liquidity & Similar Investments					1,393,543		
					0		
					4.86%		

Number/ Nominal	Description	Identification ISIN Valoren Number Ticker	Cost Valuation Price Exchange Rate	Current Valuation Price/ Type Date	Value in AUD of which Accrued Interest Proportion in %	Profit/ Loss Unrealized in AUD of which Instrument of which Forex	P/L Unreal. in % Instr. in % FX in %	
Fixed Income & Similar Investments								
Fixed Income & Similar Investments AUD								
AUD	1,262,392.79	UNITS -D- ISHARES AUSTRALIAN BOND INDEX FUND	AU60BGL01056 2244170	1.0398	1.0853 NAV 31.07.2020	1,370,021	57,378 57,378	4.37% 4.37%
	21,627	of which is pending settlement				4.78%		
AUD	3,340,745.2507	UNITS LEGG MASON WESTERN ASSET AUSTRALIAN BOND TRUST CLASS -A-	AU60SSB01221 2248336	1.2328	1.3160 BID 31.07.2020	4,396,488	278,127 278,127	6.75% 6.75%
						15.33%		
AUD	1,164,641.96	UNITS VANGUARD AUSTRALIAN FIXED INTEREST INDEX FUND	AU60VAN00014 1653500	1.1449	1.2049 NAV 31.07.2020	1,403,277	69,899 69,899	5.24% 5.24%
	19,991	of which is pending settlement				4.89%		
AUD	2,246,138.61	UNITS VANGUARD AUSTRALIAN GOVERNMENT BOND INDEX FUND	AU60VAN00253 10051461	1.1200	1.1246 NAV 31.07.2020	2,526,007	10,225 10,225	0.41% 0.41%
	40,652.91	of which is pending settlement				8.81%		
AUD	27,777	SHS -I- AUD NEUBERGER BERMAN INVESTMENT FUNDS PLC - NEUBERGER BERMAN EMERGING MARKET DEBT - HARD CURRENCY FUND	IE00B986FB81 53616359	10.5190	10.7100 NAV 31.07.2020	297,492	5,305 5,305	1.82% 1.82%
						1.04%		
AUD	225,216	SHS PIMCO FUNDS: GLOBAL INVESTORS SERIES PLC - GLOBAL INVESTMENT GRADE CREDIT FUND INSTITUTIONAL CLASS AUD (HEDGED)	IE00BL0BLL78 3752613	10.7638	10.8700 NAV 31.07.2020	2,448,098	23,924 23,924	0.99% 0.99%
	3,840	of which is pending settlement				8.54%		
AUD	9,578	SHS -BXH AUD- ROBECO CAPITAL GROWTH FUNDS SICAV - ROBECO HIGH YIELD BONDS DISTRIBUTION	LU1036586086 23764962	89.8343	91.3300 NAV 31.07.2020	874,759	14,326 14,326	1.66% 1.66%
	166	of which is pending settlement				3.05%		

Number/ Nominal	Description	Identification ISIN Valoren Number Ticker	Cost Valuation Price Exchange Rate	Current Valuation Price/ Type Date	Value in AUD of which Accrued Interest Proportion in %	Profit/ Loss Unrealized in AUD of which Instrument of which Forex	P/L Unreal. in % Instr. in % FX in %
AUD	3,803 SHS -I AUD HEDGED- AXA WORLD FUNDS SICAV - GLOBAL INFLATION BONDS DISTRIBUTION 64 of which is pending settlement	LU1774150491 40510321	113.9020	115.2600 NAV 31.07.2020	438,334 1.53%	5,165 5,165	1.19% 1.19%
AUD	4,242 SHS -RA- GAM MULTIBOND SICAV - LOCAL EMERGING BOND DISTRIBUTION 73 of which is pending settlement	LU2128492191 52867287	96.2198	95.7700 NAV 31.07.2020	406,256 1.42%	-1,908 -1,908	-0.47% -0.47%
AUD	64,935 SHS -I MINC HEDGED AUD- ABERDEEN STANDARD SICAV I SICAV - EMERGING MARKETS CORPORATE BOND FUND DISTRIBUTION 1,101 of which is pending settlement	LU2146569814 53902295	11.0502	11.2242 NAV 31.07.2020	728,843 2.54%	11,297 11,297	1.57% 1.57%
AUD	1,009,152 PENDING SUCCESSFUL SUBSCRIPTION OF UNITS LEGG MASON WESTERN ASSET AUSTRALIAN BOND TRUST CLASS -A-		1.0000	1.0000 MID 15.12.2016	1,009,152 3.52%		
Total Fixed Income & Similar Investments					15,898,727 0 55.43%		
Equities & Similar Investments							
Equities & Similar Investments AUD							
AUD	5,320 REGISTERED SHS AUSTRALIA & NEW ZEALAND BANKING GROUP LTD -500 of which is pending settlement	AU000000ANZ3 640139 ANZ.AX	28.2441	17.9600 CLO 31.07.2020	95,547 0.33%	-54,711 -54,711	-36.41% -36.41%
AUD	16,291 REGISTERED SHS AURIZON HOLDINGS LTD -1,536 of which is pending settlement	AU000000AZJ1 20175896 AZJ.AX	5.0663	4.4500 CLO 31.07.2020	72,495 0.25%	-10,040 -10,040	-12.16% -12.16%

Number/ Nominal	Description	Identification ISIN Valoren Number Ticker	Cost Valuation Price Exchange Rate	Current Valuation Price/ Type Date	Value in AUD of which Accrued Interest Proportion in %	Profit/ Loss Unrealized in AUD of which Instrument of which Forex	P/L Unreal. in % Instr. in % FX in %
AUD	7,326 REGISTERED SHS BHP GROUP LTD	AU000000BHP4 640390 BHP.AX	30.1459	36.7500 CLO 31.07.2020	269,231 0.94%	48,381 48,381	21.91% 21.91%
AUD	2,316 REGISTERED SHS CARSALES.COM LTD	AU000000CAR3 10476764 CAR.AX	15.8638	18.4000 CLO 31.07.2020	42,614 0.15%	5,874 5,874	15.99% 15.99%
AUD	3,276 REGISTERED SHS COMMONWEALTH BANK OF AUSTRALIA	AU000000CBA7 646758 CBA.AX	75.9954	71.2000 CLO 31.07.2020	233,251 0.81%	-15,710 -15,710	-6.31% -6.31%
AUD	6,355 REGISTERED SHS COCA-COLA AMATIL LTD	AU000000CCL2 646945 CCL.AX	8.8405	8.1800 CLO 31.07.2020	51,984 0.18%	-4,197 -4,197	-7.47% -7.47%
AUD	3,104 REGISTERED SHS COMPUTERSHARE LTD	AU000000CPU5 241285 CPU.AX	16.0565	13.4300 CLO 31.07.2020	41,687 0.15%	-8,153 -8,153	-16.36% -16.36%
AUD	1,191 REGISTERED SHS CSL LTD	AU000000CSL8 241548 CSL.AX	130.8613	270.1000 CLO 31.07.2020	321,689 1.12%	165,833 165,833	106.40% 106.40%
AUD	1,789 REGISTERED SHS FLIGHT CENTRE TRAVEL GROUP LTD	AU000000FLT9 90307 FLT.AX	19.8880	10.5900 CLO 31.07.2020	18,946 0.07%	-16,634 -16,634	-46.75% -46.75%
AUD	2,769 REGISTERED SHS FORTESCUE METALS GROUP LTD -467 of which is pending settlement	AU000000FMG4 1655130 FMG.AX	8.4965	17.4100 CLO 31.07.2020	48,208 0.17%	24,682 24,682	104.91% 104.91%

Number/ Nominal	Description	Identification ISIN Valoren Number Ticker	Cost Valuation Price Exchange Rate	Current Valuation Price/ Type Date	Value in AUD of which Accrued Interest Proportion in %	Profit/ Loss Unrealized in AUD of which Instrument of which Forex	P/L Unreal. in % Instr. in % FX in %
AUD	2,165 -201	CHES UNITS OF FOREIGN SECURITIES JAMES HARDIE INDUSTRIES PLC of which is pending settlement	AU000000JHX1 1303670 JHX.AX	23.8012	28.9700 CLO 31.07.2020	62,720 11,190 0.22%	21.72% 21.72%
AUD	1,640 -154	REGISTERED SHS MAGELLAN FINANCIAL GROUP LTD of which is pending settlement	AU000000MFG4 2807450 MFG.AX	38.0717	61.1600 CLO 31.07.2020	100,302 37,865 0.35%	60.64% 60.64%
AUD	587 -55	REGISTERED SHS MACQUARIE GROUP LTD of which is pending settlement	AU000000MQG1 3422370 MQG.AX	74.1362	123.4900 CLO 31.07.2020	72,489 28,971 0.25%	66.57% 66.57%
AUD	9,618	REGISTERED SHS NATIONAL AUSTRALIA BANK LTD	AU000000NAB4 641643 NAB.AX	24.0162	17.6600 CLO 31.07.2020	169,854 -61,134 0.59%	-26.47% -26.47%
AUD	3,642 -270	REGISTERED SHS NEWCREST MINING LTD of which is pending settlement	AU000000NCM7 650853 NCM.AX	27.0187	35.1800 CLO 31.07.2020	128,126 29,723 0.45%	30.21% 30.21%
AUD	11,106	REGISTERED SHS ORIGIN ENERGY LTD	AU000000ORG5 1051439 ORG.AX	7.8653	5.3700 CLO 31.07.2020	59,639 -27,713 0.21%	-31.73% -31.73%
AUD	2,172	REGISTERED SHS OZ MINERALS LTD	AU000000OZL8 4334812 OZL.AX	10.0782	13.6300 CLO 31.07.2020	29,604 7,715 0.10%	35.24% 35.24%
AUD	11,639	REGISTERED SHS QANTAS AIRWAYS LTD	AU000000QAN2 390413 QAN.AX	6.1622	3.2300 CLO 31.07.2020	37,594 -34,128 0.13%	-47.58% -47.58%

Number/ Nominal	Description	Identification ISIN Valoren Number Ticker	Cost Valuation Price Exchange Rate	Current Valuation Price/ Type Date	Value in AUD of which Accrued Interest Proportion in %	Profit/ Loss Unrealized in AUD of which Instrument of which Forex	P/L Unreal. in % Instr. in % FX in %
AUD	6,263 REGISTERED SHS QBE INSURANCE GROUP LTD	AU000000QBE9 641857 QBE.AX	11.5743	9.9100 CLO 31.07.2020	62,066 0.22%	-10,424 -10,424	-14.38% -14.38%
AUD	1,572 REGISTERED SHS RIO TINTO LTD	AU000000RIO1 603520 RIO.AX	71.3570	102.0000 CLO 31.07.2020	160,344 0.56%	48,171 48,171	42.94% 42.94%
AUD	2,209 SHS RESMED INC CHESS DEPOSITORY INTERESTS REPR 1/10 SH	AU000000RMD6 1058638 RMD.AX	14.4915	28.2800 CLO 31.07.2020	62,471 0.22%	30,459 30,459	95.15% 95.15%
AUD	39,601 UNITS SPDR S&P/ASX 200 LISTED PROPERTY FUND EXCHANGE TRADED FUND 1,427 of which is pending settlement	AU000000SLF1 1377855 SLF.AX	12.7809	10.1600 CLO 31.07.2020	402,346 1.40%	-103,789 -103,789	-20.51% -20.51%
AUD	13,161 UNITS SPDR S&P/ASX 200 FUND ETF AUSTRALIAN EQUITY EXCHANGE TRADED FUNDS 225 of which is pending settlement	AU000000STW9 1285707 STW.AX	54.0346	55.2200 CLO 31.07.2020	726,750 2.53%	15,601 15,601	2.19% 2.19%
AUD	3,211 STAPLED SECURITY TRANSURBAN GROUP	AU000000TCL6 444655 TCL.AX	11.9428	13.8100 CLO 31.07.2020	44,344 0.15%	5,996 5,996	15.63% 15.63%
AUD	13,494 REGISTERED SHS TELSTRA CORPORATION LTD	AU000000TLS2 720464 TLS.AX	4.5954	3.3500 CLO 31.07.2020	45,205 0.16%	-16,805 -16,805	-27.10% -27.10%
AUD	2,745 SHS VANGUARD MSCI AUSTRALIAN SMALL COMPANIES INDEX ETF EXCHANGE TRADED FUND	AU000000VSO2 13053435 VSO.AX	59.2617	53.8100 CLO 31.07.2020	147,708 0.52%	-14,965 -14,965	-9.20% -9.20%

Number/ Nominal		Description	Identification ISIN Valoren Number Ticker	Cost Valuation Price Exchange Rate	Current Valuation Price/ Type Date	Value in AUD of which Accrued Interest Proportion in %	Profit/ Loss Unrealized in AUD of which Instrument of which Forex	P/L Unreal. in % Instr. in % FX in %
AUD	10,273	REGISTERED SHS WESTPAC BANKING CORP	AU000000WBC1 642372 WBC.AX	27.6105	17.0900 CLO 31.07.2020	175,566 0.61%	-108,077 -108,077	-38.10% -38.10%
AUD	981	REGISTERED SHS WESFARMERS LTD	AU000000WES1 642397 WES.AX	32.9532	46.5500 CLO 31.07.2020	45,666 0.16%	13,338 13,338	41.26% 41.26%
AUD	3,229	REGISTERED SHS WOOLWORTHS GROUP LTD	AU000000WOW2 81350 WOW.AX	31.2317	38.6800 CLO 31.07.2020	124,898 0.44%	24,050 24,050	23.85% 23.85%
AUD	3,176	REGISTERED SHS WOODSIDE PETROLEUM LTD	AU000000WPL2 642429 WPL.AX	33.3412	20.0100 CLO 31.07.2020	63,552 0.22%	-42,340 -42,340	-39.98% -39.98%
AUD	3,668 -346	REGISTERED SHS COLES GROUP LTD of which is pending settlement	AU0000030678 44059594 COL.AX	16.6591	18.1700 CLO 31.07.2020	66,648 0.23%	5,542 5,542	9.07% 9.07%
AUD	0	UNITS ABERDEEN STANDARD EMERGING OPPORTUNITIES FUND	AU60ETL00329 2220820		2.0046 NAV 31.07.2020			
AUD	3,961 -374	REGISTERED SHS THE A2 MILK COMPANY LTD of which is pending settlement	NZATME0002S8 1841567 A2M.AX	14.6615	19.2900 CLO 31.07.2020	76,408 0.27%	18,333 18,333	31.57% 31.57%
Total Equities & Similar Investments AUD						4,059,950 0 14.16%		

Number/ Nominal	Description	Identification ISIN Valoren Number Ticker	Cost Valuation Price Exchange Rate	Current Valuation Price/ Type Date	Value in AUD of which Accrued Interest Proportion in %	Profit/ Loss Unrealized in AUD of which Instrument of which Forex	P/L Unreal. in % Instr. in % FX in %
Equities & Similar Investments EUR							
EUR	5,547	SHS EUR ISHARES II PLC - ISHARES CORE MSCI EUROPE UCITS ETF	IE00B1YZSC51 3246398 IQQY.DE	24.0127 1.5687 EUR/AUD	21.9400 CLO 31.07.2020	200,628 0.70%	-3.98% -8.63% 4.65%
EUR	12,701	ACCUM.PTG.SHS WELLINGTON MANAGEMENT FUNDS (IRELAND) PLC - WELLINGTON STRATEGIC EUROPEAN EQUITY FUND CLASS -N- UNHEDGED EUR	IE00B9DPD161 20938626	14.8967 1.5237 EUR/AUD	17.1056 NAV 31.07.2020	358,157 1.25%	24.24% 14.83% 9.41%
	293	of which is pending settlement					
Total Equities & Similar Investments EUR					558,785 0 1.95%		
Equities & Similar Investments JPY							
JPY	829 19	UNITS NIKKEI 225 EXCHANGE TRADED FUND of which is pending settlement	JP3027650005 1264151 1321.T	19,982.2593 83.9500 AUD/JPY	22,270.0000 CLO 31.07.2020	245,082 0.85%	24.20% 11.45% 12.75%
Total Equities & Similar Investments JPY					245,082 0 0.85%		
Equities & Similar Investments USD							
USD	303 8	ACCUM.PTG.SHS ISHARES VII PLC - ISHARES NASDAQ 100 UCITS ETF USD of which is pending settlement	IE00B53SZB19 10737617 CSNDX.S	274.7613 0.8029 AUD/USD	608.2000 CLO 31.07.2020	255,251 0.89%	146.16% 121.36% 24.80%
USD	3,786 65	ACCUM SHS -1C- USD XTRACKERS (IE) PLC - XTRACKERS MSCI USA UCITS ETF of which is pending settlement	IE00BJ0KDR00 24268896 XD9U.L	91.3629 0.7042 AUD/USD	90.4700 OFF 31.07.2020	474,420 1.65%	-3.41% -0.98% -2.43%

Number/ Nominal	Description	Identification ISIN Valoren Number Ticker	Cost Valuation Price Exchange Rate	Current Valuation Price/ Type Date	Value in AUD of which Accrued Interest Proportion in %	Profit/ Loss Unrealized in AUD of which Instrument of which Forex	P/L Unreal. in % Instr. in % FX in %
USD	17,407 SHS -R (ACC.)- GOLDMAN SACHS FUNDS SICAV - GOLDMAN SACHS EMERGING MARKETS EQUITY PORTFOLIO CAPITALISATION 406 of which is pending settlement	LU0830622741 19578737	14.6694 0.7007 AUD/USD	15.9900 NAV 31.07.2020	385,523 1.34%	21,122 31,839 -10,717	5.80% 9.00% -3.21%
USD	54,234 SHS -UCITS ETF USD C- AMUNDI INDEX SOLUTIONS SICAV - AMUNDI MSCI EMERGING MARKETS CAPITALISATION 1,261 of which is pending settlement	LU1681045453 38785088 AUEM.PA	4.8441 0.7271 AUD/USD	4.8605 CLO 31.07.2020	365,116 1.27%	3,820 1,234 2,586	1.06% 0.34% 0.72%
USD	1,047 SHS ISHARES GLOBAL HEALTHCARE ETF	US4642873255 1352444 IXJ.P	63.9247 0.6225 AUD/USD	71.3000 CLO 31.07.2020	103,398 0.36%	-4,123 10,696 -14,818	-3.83% 11.54% -15.37%
USD	908 TRUST UNITS SPDR S&P 500 ETF TRUST 21 of which is pending settlement	US78462F1030 45088 SPY.P	238.8838 0.7584 AUD/USD	326.5200 CLO 31.07.2020	410,652 1.43%	124,660 110,217 14,444	43.59% 36.69% 6.90%
USD	265 SHS VANGUARD INFORMATION TECHNOLOGY ETF	US92204A7028 1781764 VGT.P	234.3691 0.7070 AUD/USD	295.2700 CLO 31.07.2020	108,378 0.38%	20,535 22,354 -1,818	23.38% 25.99% -2.61%
Total Equities & Similar Investments USD					2,102,738 0 7.33%		
Total Equities & Similar Investments					6,966,555 0 24.29%		

Number/ Nominal	Description	Identification ISIN Valoren Number Ticker	Cost Valuation Price Exchange Rate	Current Valuation Price/ Type Date	Value in AUD of which Accrued Interest Proportion in %	Profit/ Loss Unrealized in AUD of which Instrument of which Forex	P/L Unreal. in % Instr. in % FX in %
Alternative Investments, Commodities & Real Estate							
Hedge Funds							
AUD	259,316.381	UNITS GMO SYSTEMATIC GLOBAL MACRO TRUST CLASS -B-	AU60GMO00067 3375604	1.0073	1.0232 NAV 30.07.2020	265,333	4,116 4,116 1.58%
						0.93%	
AUD	473,358.07	UNITS BLACKROCK GLOBAL ALLOCATION FUND (AUST) CLASS -D- WHOLESale	AU60MAL00181 3379478	1.2335	1.2112 NAV 31.07.2020	573,318	-10,547 -10,547 -1.81%
						2.00%	
AUD	159,505	RED.PTG.SHS -A1- AHL (CAYMAN) SPC AUD CLASS A EVOLUTION SEGREGATED PORTFOLIO	KYG012291145 22393979	1.1382	2.0024 NAV 30.06.2020	319,393	137,843 137,843 75.93%
						1.11%	
USD	149	RED.PTG.SHS -A- CS RENAISSANCE ALTERNATIVE ACCESS FUND LTD USD	KYG258511099 34032546	1,160.0017 0.7191 AUD/USD	954.2690 EST 17.07.2020	196,940	-43,416 -42,459 -17.74%
						0.69%	-0.33%
USD	83.17	RED.PTG.SHS -C- CS RENAISSANCE EQUITY ACCESS FUND LTD	KYG258691271 39462785	1,135.2262 0.6894 AUD/USD	1,029.3694 EST 24.07.2020	118,581	-18,379 -12,194 -9.32%
						0.41%	-4.09%
Total Hedge Funds					1,473,565	0	5.14%
Private Equity							
AUD	243,253.52	UNITS PARTNERS GROUP GLOBAL VALUE FUND (AUD) WHOLESale	AU60ETL02762 26607292	2.0454	2.3813 NAV 30.06.2020	579,260	81,713 81,713 16.42%
						2.02%	
Total Private Equity					579,260	0	2.02%

Number/ Nominal	Description	Identification ISIN Valoren Number Ticker	Cost Valuation Price Exchange Rate	Current Valuation Price/ Type Date	Value in AUD of which Accrued Interest Proportion in %	Profit/ Loss Unrealized in AUD of which Instrument of which Forex	P/L Unreal. in % Instr. in % FX in %
Commodities & Precious Metals							
AUD	1,171	ETC SECURITY ETFS METAL SECURITIES AUSTRALIA LTD 2003-WITHOUT FIXED MATURITY ON GOLD COMMODITY	AU00000GOLD7 1583458 GOLD.AX	170.7286	256.7000 CLO 31.07.2020	300,596 100,673 100,673	50.36% 50.36%
	25	of which is pending settlement			1.05%		
USD	537	UBS ETC UBS AG, LONDON BRANCH 2007- OPEN END ON UBS BLOOMBER CMCI COMPOSITE TOTAL RETURN	CH0031794263 3179426 TCMCI.S	1,000.8129 0.8320 AUD/USD	759.0000 BID 31.07.2020	564,539 -81,396 -179,859 98,463	-12.60% -24.16% 11.56%
	17	of which is pending settlement			1.97%		
Total Commodities & Precious Metals					865,135 0 3.02%		
Real Estate							
AUD	21,946	STAPLED SECURITY DEXUS	AU000000DXS1 3819970 DXS.AX	11.2926	8.5100 CLO 31.07.2020	186,760 -61,068 -61,068	-24.64% -24.64%
					0.65%		
AUD	25,319	STAPLED SECURITY GOODMAN GROUP	AU000000GMG2 18079202 GMG.AX	9.3927	16.9300 CLO 31.07.2020	428,651 190,836 190,836	80.25% 80.25%
					1.49%		
AUD	48,048 3,309	STAPLED SECURITY MIRVAC GROUP of which is pending settlement	AU000000MGR9 821911 MGR.AX	1.8618	2.0900 CLO 31.07.2020	100,420 10,962 10,962	12.25% 12.25%
					0.35%		
Total Real Estate					715,831 0 2.50%		

Number/ Nominal	Description	Identification ISIN Valoren Number Ticker	Cost Valuation Price Exchange Rate	Current Valuation Price/ Type Date	Value in AUD of which Accrued Interest Proportion in %	Profit/ Loss Unrealized in AUD of which Instrument of which Forex	P/L Unreal. in % Instr. in % FX in %
Other Alternative Investments							
AUD	4,508	PTG.SHS LEGG MASON GLOBAL FUNDS PLC - LEGG MASON WESTERN ASSET MACRO OPPORTUNITIES BOND FUND PREMIER CLASS DISTRIBUTING (S) HEDGED AUD	IE00BYOZZ17 28828240	102.2723	115.0400 NAV 31.07.2020	518,600 1.81%	57,557 57,557 12.48%
Total Other Alternative Investments						518,600 0 1.81%	
Total Alternative Investments, Commodities & Real Estate						4,152,391 0 14.48%	
Mixed & Other Investments							
AUD	2,625	ACCUM SHS -I- HEDGED AUD PGIM FUNDS PLC - PGIM QMAW KEYNES SYSTEMATIC ABSOLUTE RETURN FUND	IE00BKV41X02 54282717	101.0641	102.7270 NAV 31.07.2020	269,658 0.94%	4,365 4,365 1.65%
Total Mixed & Other Investments						269,658 0 0.94%	
Total Investments						28,680,874 100.00%	
of which Accrued Interest						0	

4. Appendix

4.1. Explanations

Accrued Interest

Accrued interest is not displayed for financial instruments with variable interest rate or frequency within the same interest period, except for Floating Rate Notes. For FINER Revexus, the accrued interest displayed is based on the deposit currency for reference purpose only. Entitlement to the accrued interest depends on the product features. All accrued interests are displayed in the reporting currency of the portfolio and are calculated recognizing trades end of day. The FX conversion rates (reflected below) are used to convert the amount from original currency to reporting currency. The accrued interest payable/receivable is displayed as the net amount on Current Account balances. As a result of the foregoing and other factors, the accrued interest is only an estimate and may not reflect the actual interest accrued, if any.

Activity Summary

The asset inflows and outflows include client-instructed transactions, which are aggregated as Net Investment Asset Flows. Non-Investment Flows refer to transactions related to Non-Investment Related Positions such as loan transactions to finance such Non-Investment Related Positions. Non-investment Flows do not contribute to the performance of the account. Such asset inflows and outflows do not include fees and taxes.

Analyses

Values displayed for the respective month labels are as of month-end dates. If the report end period is not a month-end, the report period end month label will show the values as of the report period end date.

Asset Classification

If an instrument is classified as 'not classifiable', the instrument is pending its proper classification. As soon this is available in the system, the instrument will reflect the correct classification.

Cost Valuation Exchange Rates

For the Positions section, the cost valuation exchange rate displayed is always the instrument currency against the portfolio currency.

For the Transactions section, the cost valuation exchange rate displayed is always between the instrument currency and reporting currency. For execution of FX purchase/sale transactions, the transaction valuation is based on the end of day exchange rate on the value date and the cost valuation is based on the FX contract rate.

Duration

Modified duration is a change in the price of a bond arising from a change in market yields. Modified duration is expressed as an approximate percentage. The investment report displays the Modified Duration method for all Fixed Income instruments.

Fees/ Taxes

Fees include management or safekeeping fees.

Taxes include value-added taxes and service related taxes, depending on country specific rules.

Income Summary

Coupon received and coupon paid, as well as interest earned and interest paid, does not include accrued or unpaid coupon or interest.

Year to date figures include the addition of the monthly figures inclusive of any backdated income processing/ adjustments.

Figures shown can be gross or net depending on the specific country and market practice.

Non-Investment related Income is included in the Income Summary.

Market Value

The values stated as begin of period are asset values as of the last reported statement period.

The values stated as beginning/ ending market values are asset values that are inclusive of most updated market prices and backdated transactions.

Non-Investment Related Positions

Non-Investment Related Positions refer to non-asset/ non-investment type positions such as those relating to insurance policies or mortgages. Guarantees, standby letters of credit, holdcovers or other credit instruments which have been issued by the Bank pursuant to facilities granted are reflected under the sub-section entitled "Pro Memoria Positions".

Non-Investment Related Positions are displayed in the Scope of Analysis and in the Non-Investment Related Positions section. However, they are not included in any other analyses.

Performance Calculation

The performance figures are calculated based on investment related positions using the TWR Daily method (Time Weighted Rate of Return), which is based on geometrically linking daily rates of return.

The start of period displayed for the performance calculation is referring to Beginning Market Value, which is the closing balance of the previous day. The end of period displayed is referring to Ending Market Value, which is the closing balance of the day.

The net of fees and gross of taxes return is calculated after deduction of fees and before deduction of taxes.

The cumulative return calculation is reset, every time when geometrically linking the rates of return would render distorted values. Such scenarios can happen when the market values fluctuate around zero.

Return values prior 2015 displayed in this report might be different from previously reported return values.

Profit/ Loss Calculation

Realized and unrealized profit and loss are calculated by comparing the market or transaction value with the average cost value. For every trade date the system computes the average cost, first processing investments before disinvestments. Transaction costs are included in both realized and unrealized profit/loss calculation.

Unrealized profit/ loss displayed in the Positions section are calculated as of the reporting date.

FX conversion rates used in the computation of the unrealized profit/loss is the derived rate based on the average price as of the individual transaction date.

Rating

Rating refers to the rating of an investment product and is either based on information available to the Bank or is obtained from sources believed to be reliable by the Bank as of the investment report date.

Yield

The investment report displays Yield for all Fixed Income instruments and is displayed per market price.

Abbreviations

BID	=	Bid Price
CLO	=	Closing Price
EST	=	
MID	=	Average Price
NAV	=	Net Asset Value
OFF	=	Official Price

Rounding logic

Values in this investment report are calculated with exact numbers, however when presenting the data, values are rounded and therefore minor rounding differences might occur.

Large Numbers

The figures are consolidated and shown in denominations of thousands, millions and billions where applicable. If a value is too long to be displayed in the report itself, e.g. 1,526,555,333.26 the figure is consolidated and displayed as 1,526,555.33 in thousands in the report. If the value exceeds the column limit, a further division will take place and the phrase in millions/in billions will be displayed.

Conversion Rates as of 31.7.2020

AUD 1.0000 = JPY 75.3291

AUD 1.0000 = USD 0.7220

EUR 1.0000 = AUD 1.6485

4.2. Legal Information

According to the Account Opening Terms and Conditions, this investment report shall be conclusive and binding if the Bank does not receive your objection in writing to any matters contained in this investment report within 14 days from the issue date.

Deposits with Credit Suisse are not subject to Division 2 of the Banking Act - Protection of Depositors.

If your account is booked with Credit Suisse AG, Sydney Branch or if your Relationship Manager (RM) or Investment Consultant is located in Australia, please refer to the Important Notice on Sales Disclosure to Investors for sales related information including information on monetary benefits received by the Bank where it distributes an investment product to you.

The Bank provides price indications for financial derivatives transactions, structured products and non-listed financial instruments based upon available market reference prices believed to be reliable. The Bank does not make any representation as to the accuracy or completeness of price indications for transactions nor the guarantee to buy/sell at the price indicated. The Bank does not accept liability for any loss arising from the client's use of, or reliance on, such price indications. The price indications of the initial purchase price may be different from the actual purchase price.

In the absence of reliable market reference prices, the Bank may assign a nominal value or make an appropriate comment on your investment report. As a result, the investment report may contain price indications or comments as the Bank sees appropriate in the prevailing circumstances. If you have any queries in this respect, please contact your Relationship Manager.

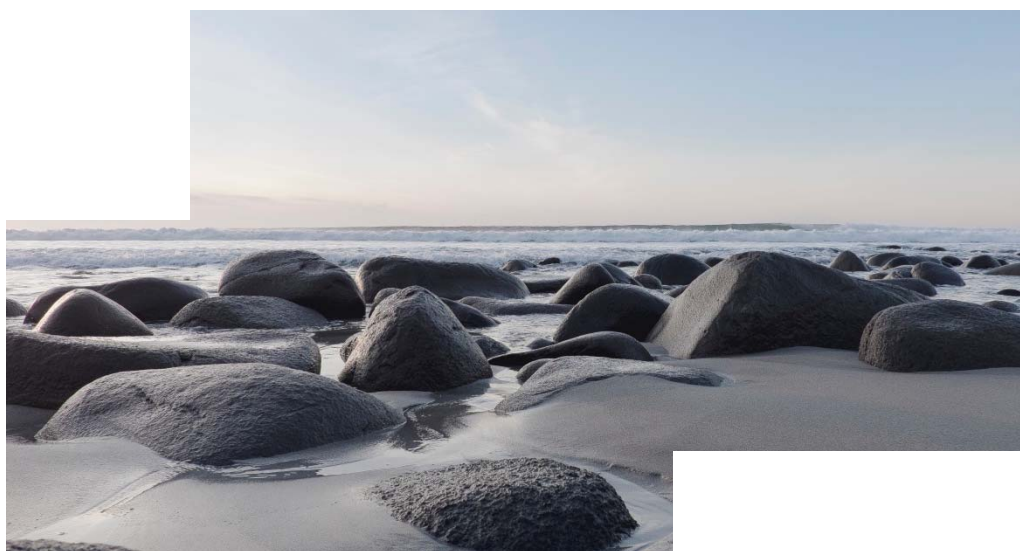
The Bank will, at the time of printing this investment report, use the last price indications available to it. Due to the time differences between the Asia Pacific region and markets in other regions, the price indications reflected in the Bank's investment report will not always reflect the price indications available on the last business day of the month in certain markets.

The Bank may use either an onshore or offshore CNY rate for FX conversion to reporting currency depending on the asset. Please note that there may be a differential between the onshore and offshore rate. Please refer to your RM if you need further information on the FX conversion rate applied in relation to your CNY positions.

The information in this investment report does not constitute legal or tax advice. You should consult your legal and/or tax experts if you need any such advice. The investment report does not take tax rules and regulations into consideration, and thus it cannot be used for tax reporting purposes.

This investment report is an electronically generated report and does not require a signature.

APNIC Monthly Reporting



Summary

- The APNIC portfolio was positive again in July, up 0.88% for the month as global equities ex-Australia rallied on the back of hopes for further economic stimulus and positive vaccine developments.
- Australian equities advanced 0.50%.
- AUD bonds were up a little at 0.37%.

Market Commentary

July marked a fourth consecutive month of gains for equity markets as positive vaccine developments and expectations for further economic stimulus from major global economies lifted investor sentiment. However, the stronger AUD dollar tempered returns for Australian investors. In AUD terms, US, European and Emerging Markets equities returned 2.13%, -0.26% and 5.06%, respectively. The Australian share market lagged global peers, returning just 0.50% for the month as a second wave of COVID-19 cases in Victoria halted the nation's three stage reopening strategy. Australian bonds were up an incremental 0.37%.

Australian economic data has generally been muted but it has yet to capture the effects of the second round of Victorian COVID-19 lockdowns. Retail sales were up 2.7% in June, ahead of expectations of 2.4%. The June labour market report showed an extra 200k jobs were added to the economy, although an increase in the number of people actively looking for work saw the labour force grow, which pushed the unemployment rate up from 7.1% to 7.4%. The housing market weakened with national house prices falling 0.6% in July but the pace of decline slowed from the prior month. The RBA kept rates on hold at the lower bound of 0.25% and revised down forecasts for the pace of the economic recovery. However, the government eased fears of a hard economic landing by announcing an extension of Jobkeeper and Jobseeker.

Economic data from the US has generally been better than expected. US GDP contracted by an annual rate of 32.9% in 2Q20. Although this is the steepest quarterly decline in more than 70 years, it was not unexpected. The labour market continued to fare better than feared with 1.8m jobs added to the economy and the unemployment rate falling from 11.1% to 10.2% in July. Retail sales surged 7.5% in June, beating expectations for 5.0%, and record low mortgage rates continued to support a robust

housing market. The recent increase in COVID-19 cases across several states, especially large ones such as Texas, Florida and California has cast a shadow on the economic outlook. The University of Michigan Sentiment index suggests consumer sentiment has taken a hit in July, falling from 98.3 to 92.6. However, an announcement by the US government of plans for a further US\$1tn relief package towards the end of July has helped ease market concerns.

Europe contracted at a record annualised rate of 40.3% in 2Q20. This figure captures the immediate and possibly most severe impact of COVID-19 restrictions on the region to date, given lockdowns were at the strictest levels for several countries. However, the outlook is looking more promising. Manufacturing activity bounced back to growth in July with EU Markit Manufacturing PMI jumping from 47.4 to 51.8. Retail sales improved by 5.7% in June, bringing the 12 month gains to 1.3%, ahead of expectations for a decline of 0.5%. European Union leaders added to the optimism when they broke a deadlock towards the end of the month by agreeing on a €750bn pandemic recovery fund deal.

As the first economy entering the health crisis, China appears to be further along the path of economic recovery than its global counterparts. Following a sharp contraction in 1Q20, the latest estimates show GDP grew around 55% on an annualised basis in 2Q20. The official NBS Manufacturing PMI has recovered strongly since the record low reading of 35.7 during the height of COVID-19 restrictions in February and has stabilised at a mildly expansionary reading of 51.1 in July. Retail sales has shown some signs of recovery since also hitting a record low in February, declining just -1.8% in June on a YoY basis compared to -2.8% in the prior month. That said, deteriorating trade tensions with the US which saw the US shutdown a Chinese consulate in Houston and China retaliating with a shutdown of a US consulate in Chengdu, serves a gentle reminder of the risks that lay ahead.

Market Value as at 31 July 2020

	Market Value
APNIC Portfolio	A\$28,693,154

Performance as of 31 July 2020

APNIC Portfolio				
	Portfolio	Benchmark	Relative	CPI + 2.5%
Month	0.88%	0.76%	+0.12%	0.05%
3 Months	2.72%	2.70%	+0.02%	0.49%
Year To Date	-0.10%	0.33%	-0.43%	2.01%
1 Year	0.57%	1.10%	-0.53%	3.81%
3 Years pa	5.63%	5.62%	+0.01%	4.19%
Since Inception pa	5.22%	5.34%	-0.12%	4.34%

* Performance is after fees but before franking

Positive Contributors to Performance

Australian stocks performing well included:

Fortescue Metals (+25.70%)

Australia's largest pure play iron ore miner continued to benefit from strength in iron ore prices reflecting strong steel production in China and ongoing supply disruption in Brazil. The company has also performed well operationally meeting its targets for production and operating costs while providing higher than expected production guidance for the FY21 year. The balance sheet remains in strong shape and investors expect significant shareholder payouts given the company's high levels of profitability.

OZ Minerals (+24.36%)

The share price of Australia's leading pure copper mining exposure rallied significantly given strong copper prices and a positive production update. The company indicated the ramp up of its new Carrapateena miner was performing ahead of expectations during the June quarter thereby lowering execution risk of the project. A feasibility study was also released exploring a potential initiative to lift production at its Prominent Hill mine that would also lower unit costs and potentially extend mine life.

Goodman Group (+14.01%)

Investor preference for the high quality industrial property ecosystem offered by the company led to continued reallocation from traditional commercial property assets reflecting concerns on the weak outlook for retail and office property. Given accelerating demand for ecommerce the company's industrial platform remains well positioned for an extended period of market share growth and strong returns as a result of the COVID-19 pandemic.

Negative Contributors to Performance

Australian stocks underperforming included:

Qantas (-14.55%)

The share price of Australia's leading airline declined as the anticipated pick up in domestic travel was setback by the Covid-19 outbreak in Victoria. Given these developments the company was expected to raise less capital from its retail shareholders as pricing had become less attractive. From an investor confidence point of view the share price has been influenced by second wave Covid-19 outbreaks on the negative side and signs of progress on vaccine development on the positive side.

Aurizon (-9.55%)

Weakness in coal prices led to concern on the potential impact on volumes for Australia's largest coal haulage operator. Although the company is an infrastructure provider and has low exposure to commodity prices, the impact of weak global coal demand is leading to a degree of near-term volume weakness where there is some earnings sensitivity. Weaker industry volumes reflect the impact of global Covid-19 shutdowns on coal demand used in steel production and power generation.

Origin Energy (-8.05%)

The decline in the share price was driven by an overall retracement in the energy sector as second wave Covid-19 outbreaks raised concerns on durability of the oil price recovery. The company's recent quarterly production report confirmed favourable price realization from its APLNG coal seam gas

business and a record cash distribution of \$1.275bn. The decline in electricity and gas volumes in the utility business were in line with expectations given the impact of domestic economic shutdowns during the quarter.

Current Asset Allocation

Asset Class	Tactical Position
Cash	Underweight
Bonds	Neutral
Australian Equities	Overweight
International Equities	Underweight
Alternative Investments	Underweight

Outlook

July continued the trend of positive markets for both equities and bonds. Six months into the COVID-19 health crisis and investors are behaving as if the crisis is almost over. The NASDAQ has set new records, the S&P500 is above where it started the year and although the ASX200 is still some 15% below its pre COVID-19 peak, it has recovered 32% from its lows. Markets have been driven by three main factors. First, there has been continued improvement in economic data globally as lockdowns ease. Second, there is the promise of further support from government and central banks, and third, positive progress on the vaccine front.

On a global basis, we believe each of these three factors will continue to influence markets positively as we move towards Christmas. However, just for the moment, equity valuations are stretched. As a result, we have taken some profit by reducing the overweight equity allocation down to a neutral position versus the benchmark. With the US Presidential election approaching and the possibility of trade interruption due to rising rhetoric between the US and China, we believe there will be a better time to move back into share markets.

Data Sources

Credit Suisse, unless otherwise specified.

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Agenda Item 9

APNIC Survey 2020 report

APNIC 2020 Survey Report

September 2020

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Introduction and methodology

APNIC values the feedback and views of Members and Stakeholders, with results of the biennial Survey integral to its future planning and continuous improvement processes.

The APNIC survey process comprises a series of consultations across the region, which this year were done as individual interviews via video conference with interested respondents. This was followed by an online survey promoted throughout the region. The survey is open for any interested Member or Stakeholder to complete. The APNIC Survey is run every two years and is in its eleventh iteration.

The APNIC 2020 Survey was conducted between the 13th and the 31st July 2020 to gain feedback from APNIC Members and other Stakeholders (Members of a National Internet Registry (NIR), or others involved in the Internet community) about APNIC services, the challenges they face and where APNIC can assist. The Survey forms an integral part of the strategic planning process and helps the APNIC Executive Council (EC) and Secretariat to understand the needs and wishes of the community. The results are used to guide decisions on future priorities and developments, and inform APNIC strategic planning.

The 2020 Survey was again conducted by Survey Matters, a research agency specialising in research for Member-based organisations. As with previous surveys, the APNIC EC commissioned and approved the survey, and engaged Survey Matters to ensure the anonymity of responses.

Individual responses are not identified in this report; results are provided at an aggregate level only. To further protect participant anonymity, no organisations or locations are noted against verbatim feedback provided in this report. No identifying data has been provided to APNIC.

This report provides the full feedback from the online survey. Where appropriate, it also draws on feedback from interviews conducted by Survey Matters during March and April 2020.

Response Rates and Sample

Following a comprehensive communication and survey distribution program, 1,659 responses were received and, after data cleansing, 1,624 responses remained. The sample size provides 95% confidence that results are within +/- 3% of presented figures.

Of the responses received, 73% were received from APNIC Members or Account Holders. The remaining 27% were from Members of NIRs within the APNIC region or other Stakeholders, namely consumers of APNIC services who are not formally APNIC Members.

Most responses (96%) were from the Asia Pacific economies served by APNIC. Consistent with 2018, only 4% were from outside the Asia Pacific region.

Sub-region sample composition has changed in 2020, with responses from East Asia falling from 27% in 2018 to 16% this year. This fall is largely driven by fewer responses from China.

Please note that some segments contain small samples and so do not aim to be representative of the different segments. They do, however, provide directional feedback about the opinions of these respondents.

Interviews

The survey instrument (online survey form) that forms the basis of this 2020 APNIC Survey Report was developed following a series of interviews conducted in March and April 2020.

Conducting qualitative research prior to undertaking an online survey is best practice in research of this kind, as it gathers perspectives directly from randomly selected Members that can be tested across the wider Member and Stakeholder base through the online survey instrument.

While in prior years the qualitative component of the research took the form of focus groups held across the region, in 2020 discussions were conducted as individual interviews, either online via video conference or telephone. This allowed the project to canvass opinions from respondents from a larger number of economies than in previous years. Up from ten in 2018, participants from 24 economies participated in the interview process in 2020.

Interviews were conducted with Members and stakeholders in 24 economies. A total of 41 interviews were conducted with participants in the locations below:

Australia	Mongolia
Bangladesh	Myanmar
Bhutan	New Caledonia
Brunei	Pakistan
Cambodia	Papua New Guinea
China	Philippines
Hong Kong	Solomon Islands
India	Taiwan
Indonesia	Thailand
Japan	Timor Leste
Korea	Vanuatu
Malaysia	Viet Nam

The full Interview Report is available at apnic.net/survey. Where relevant, quotes and themes from the interviews are referenced in this report, as they provide depth of understanding to the quantitative results.

Online Survey

The quantitative survey was designed by Survey Matters. It was based on output from the interviews but also included consultation with the APNIC EC and Secretariat.

As in 2018, the survey instrument comprised two separate surveys; one designed for Members and Account Holders of APNIC, the other for Members of an NIR or other interested Stakeholders.

A variety of question types were used in the Survey. Where questions required a degree of agreement, satisfaction or priority, a seven point scale has been used. This allows results to be compared (where applicable) between this survey and those conducted in 2014, 2016 and 2018.

The 2020 survey questionnaire was designed primarily as a quantitative instrument, but respondents were also given opportunities to provide feedback in their own words (and in their own language if desired). The addition of these are used throughout this report to add depth to the statistical results.

Translation

The survey questionnaire was translated into 15 languages in 2020, up from eight in 2018. The languages selected for translation were Bengali (Bangladesh), Chinese (Simplified and Traditional), Indonesian, Hindi (India), Japanese, Korean, Mongolian, Burmese (Myanmar), Nepali, Tagalog (Philippines) Thai, Urdu (Pakistan) and Vietnamese. These languages were chosen by the APNIC Secretariat based on several factors, including level of perceived English proficiency, membership size, and level of engagement (or lack of, in some cases) with previous surveys.

A total of 568 surveys were completed in a language other than English, up from 389 in 2018. Reflecting the inclusion of seven additional languages, this represents 35% of all surveys completed and is up from 31% in 2018. Non-English verbatim feedback was translated back to English using Google translate, with a verification of translations undertaken by language specialists within APNIC.

A breakdown of non-English language survey completions by economy is provided on page 14.

Communication and Distribution

The survey was designed as an anonymous online instrument (hosted by Survey Matters), and promotion of the survey was done by the APNIC Secretariat. Several prizes were offered throughout the communication schedule to encourage responses at different stages of the fieldwork.

Data Cleansing

At the conclusion of the online survey, Survey Matters undertook data cleansing as per the standard protocols for market research. A total of 1,659 responses were reviewed and after interrogation 35 were removed as they were either generally unreliable or found to be multiple responses from the same respondent.

The method used to clean the data was as follows:

- Removal of records where respondents answered too quickly or selected the same rating or score regardless of the question being asked throughout the survey.
- Removal of multiple responses where the information regarding the prize draw was the same.

Survey Analysis

When analysing the survey data, results have been cross tabulated by respondents' relationship with APNIC (Member or Stakeholder), APNIC sub-region (East Asia, Oceania, South East Asia and South Asia) and Classification of Economies (Developed, Developing and Least Developed Economies (LDEs) based on the UN classifications referenced in the Appendix.

Differences in the opinions and behaviours of respondents based on their APNIC relationship, sub-region and economy classification are presented throughout the report and highlighted where the findings are significant.

The results to survey questions are displayed as either a mean score (always out of a maximum score of seven) or as a percentage of respondents who selected a positive option. Where possible and appropriate, a full frequency distribution is shown. Comparisons to the 2016 and 2018 Surveys are made where possible.

Where percentage ratings for agreement, satisfaction or importance are referred to throughout the body of the report, these have been classified as follows:

- Scores of 5, 6 or 7 out of 7 are positive (blue)
- Score of 4 out of 7 is neutral (grey)
- Scores of 1, 2 and 3 out of 7 are negative (red)

We have also drawn on the qualitative comments and have referenced the feedback provided in the interviews conducted when reaching many of our conclusions. In many instances, the quantitative findings are used to validate the issues raised in the interviews. In others, the free text or interview feedback provides further insight into the quantitative findings.

Executive summary

Overall satisfaction with the quality and value of APNIC services and Membership remains high, with a vast majority providing positive ratings.

Consistent with 2018 and 2016, respondents in South Asia are most satisfied with the overall quality and value of APNIC services and Membership. Those from the least developed economies (LDEs) also report higher satisfaction than their more developed counterparts. While remaining high, respondents from Oceania provided significantly lower ratings across quality and value dimensions.

APNIC Service Usage

Engagement with APNIC was also higher. Up from 67% in 2018, 71% of respondents had at least one interaction with APNIC over the past two years.

A third of respondents had over five interactions with APNIC. While survey respondents reported usage of new membership accounts, the website and APNIC Blog was lower than recorded in 2018, more respondents have used MyAPNIC, RPKI, IP address transfer services and attended APNIC training.

Satisfaction with individual APNIC services also remains high. Ratings for nearly all services improved in 2020. As in previous Survey waves, respondents are most satisfied with their personal interactions with APNIC, such as meetings with an APNIC representative and the support provided by the APNIC Helpdesk.

Satisfaction with APNIC training also rose. Up 3% from 2018, 97% of respondents were satisfied with their experience of APNIC training. While use and interaction with the APNIC Foundation is relatively low among respondents, satisfaction is also very high at 96%.

Satisfaction with APNIC's core services of IP address applications, allocations and transfers, the Whois database, reverse DNS and Technical Assistance were also consistent or slightly higher than in 2018. In particular, positive ratings for IPv4 address transfers increased 6% to 92%.

Endorsement

Members and Stakeholders continue to hold APNIC in high esteem.

Respondents also speak well of APNIC, with two thirds (66%) speaking highly about the organisation. Those who speak highly about APNIC without being asked has risen from 10% in 2016, when the question was first included in the Survey, to 12% in 2018 and 20% this year.

Also pleasing, fewer respondents indicate they are neutral about APNIC, with many who were previously ambivalent now reporting they speak about APNIC positively.

Strategic challenges

The Internet community faces a variety of strategic challenges with cost control, regulatory compliance, security risk and finding skilled employees the biggest issues for those in executive positions.

This year a section on the strategic challenges facing organisations was included in the Survey, to better understand the issues facing those in executive or managerial positions.

From a strategic perspective, four main challenges faced by executives emerged. Cost control of hardware, software and network investment is ranked as the main issue by 17% of respondents.

Regulatory compliance (16%), security risks affecting business and hiring and retaining skilled employees (both 15%) round out the four biggest issues.

While the free text comments provided about how APNIC can best assist with challenges largely focussed on operational aspects like training, there were also suggestions that APNIC could facilitate “education activities for governments and those who make policies and regulations”. Others mentioned that helping organisations make buying decisions “not based on vendor propaganda ... have reliable trusted sources to check beforehand ...” would aid in cost control.

Operational challenges

Despite a wide variety of issues emerging from the individual interviews conducted prior to the Survey, network security is still the main challenge.

Nearly a quarter (23%) of respondents rank network security as the biggest issue faced by their organisation. Handling security threats is a challenge for organisations across the region, with at least one in five respondents in all APNIC sub-regions ranking it as the number one issue they face.

Reflecting the strategic focus on cost control, cost management of systems, networks and security is the main challenge for 18% of respondents. In particular, respondents from Oceania are concerned about the costs related to systems, networks and security, with 26% ranking it their number one challenge.

Overwhelmingly, respondents believe that the best form of assistance APNIC can offer to help with the challenges they face is education and training. While acknowledging that APNIC already offers training in many forms and across many topics, respondents want more, with comments such as “more training & workshops”, “more training content” and “more local or online training for basic and advanced users” prevalent in the free text comments.

Network Security

DDoS attacks, phishing, spam, ransomware and malware remain the biggest network security issues faced.

Forty-one percent (41%) of respondents indicated that DDoS attacks are one of the main network security threats their organisation faces.

Two in five (40%) respondents indicated that phishing, spam, ransomware and malware are problematic for their organisation, with those from Oceania (49%) more likely than other regions to identify these as issues for them.

Consistent with feedback provided in interviews conducted with Members prior to the Survey, lack of awareness of security issues amongst employees is also a concern, with three in 10 (30%) indicating this is an issue for them when managing network security.

As is common across the Survey, training, collaboration and sharing of knowledge is the best way respondents believe APNIC can assist the Internet community deal with ongoing security issues.

IPv4 Scarcity

A lack of available IPv4 addresses continues to be a challenge for organisations.

With 13% ranking it as their biggest challenge, coping with IPv4 shortages remains an issue – although fewer respondents rank it amongst their top three challenges and feedback from the interviews suggests it is becoming less important. In particular, at only 8%, those in Oceania are less concerned about IPv4 shortages than respondents in other sub-regions.

As in 2018, deploying IPv6 (34%) and the cost of buying IPv4 addresses (27%) are the biggest issues arising from the shortage of IPv4. Over a quarter (26%) also report challenges in finding available IPv4 addresses, particularly in East Asia, South East Asia and South Asia.

Of the actions that APNIC could take to assist with IPv4 shortages, two in five respondents (40%) favour APNIC reclaiming unused addresses which have no existing holder. A further 39% want APNIC to analyse and identify unused IPv4 addresses, presumably to enable reclamation of these.

Deploying IPv6

Reported full deployment of IPv6 has grown from 15% in 2018 to 20% this year, with Members in East Asia (36%) significantly more likely to have fully deployed IPv6 than those in other sub-regions.

Nearly a quarter (23%) have deployed IPv6 in their core networks and 32% have a deployment plan. Pleasingly, the proportion who report that they have no deployment plan in place has dropped from 35% in 2016 to 25% this year.

A lack of demand from customers remains the biggest barrier to IPv6 deployment outside core networks. Over half of respondents (53%) cite that lack of customer demand prevents deployment; this rises to over three in five Members in South East Asia and Oceania.

Lack of skills and knowledge (31%) and customer equipment (CPE) that does not support IPv6 (26%) are also barriers to full IPv6 deployment.

Training

Training emerged as one of the main themes of the Survey. Confirming that training is a highly valued service, attendance at APNIC training was significantly higher in 2020.

Over two in five (41%) respondents attended some form of APNIC training in the past two years, up from 27% in 2018.

Almost a quarter (23%) of respondents attended face-to-face training or online, self-paced training on APNIC Academy, while 20% have undertaken on-line live training on APNIC Academy or other platforms.

Respondents in South Asia and in LDEs are significantly more likely to report they have used the online, self-paced training on APNIC Academy than other sub-regions or economies (both 29%).

Those in South East Asia and Oceania are most likely to have participated in APNIC training activities. At 55%, respondents in East Asia are more likely to have not attended any form of training in the past two years.

Online training activities offer the most value, with online Virtual Labs and on-line self-paced training preferred by 54% and 45% of respondents respectively. A further 42% value full training certification.

Over a quarter would value training and training materials delivered in their local language, with those in East Asia significantly more likely to call for local language formats (40% and 46% respectively).

The most frequently mentioned topics for potential APNIC training were IPv6 deployment and network and cyber security. There were also frequent requests for training in BGP, RPKI, ROA and ROV, as well as SDN and SD-WAN.

RPKI, ROA and ROV Awareness and Deployment

Awareness and use of RPKI as a means to improve routing security has increased substantially, up from 10% in 2018 to 27% in 2020.

Over a third (38%) of respondents have either deployed RPKI or have plans to implement it. Satisfaction with APNIC RPKI has also surged, up from 85% in 2016, to 89% in 2018 and 94% in 2020.

Use of ROA is also relatively high, with over a quarter (26%) having already deployed ROA and another 13% reporting plans to implement the technology.

Awareness of ROV is lower, with 50% citing no awareness of the technology. Nine percent (9%) have implemented ROV in their networks, and 15% have plans to deploy.

To encourage implementation of RPKI, ROA and ROV, respondents indicated that online training (67%) and Technical Assistance (37%) are the best forms of support APNIC can provide. Case studies of successful implementation and face-to-face training (27% and 20% respectively) would also be helpful.

Dealing with Diversity

The Survey continues to highlight the differences in the needs and preferences of stakeholders in different regions and economies.

As was apparent in 2018, respondents in LDEs appear to rely more heavily on APNIC, with those in LDEs more frequent users of APNIC services such as MyAPNIC, the APNIC Helpdesk, training, conferences and events. They are also more likely to rate their APNIC Membership and the services they engage with favourably. As expected, however, cost is a bigger barrier to participation in community activities amongst this group.

Regional differences are also evident. Satisfaction with the quality and value of APNIC services and Membership is significantly higher amongst respondents from South East Asia. They also rate IP address application and allocation processes, and individual services such as MyAPNIC, the APNIC website and Whois Database, more favourably than those in other regions. Broadly speaking, respondents from East Asia and Oceania indicate slightly lower satisfaction.

Barriers to participation also vary across regional lines. Cost is the factor most likely to prevent engagement with APNIC activities amongst respondents from South East Asia. Conversely, respondents in East Asia are less likely to cite cost as a barrier to participation in APNIC activities, with language barriers more likely to prevent them engaging. Lack of time is the biggest issue for respondents from Oceania.

Reflecting this diversity, demand for local opportunities and language support was apparent. When asked how APNIC could encourage greater participation in community activities, over a third (36%) suggested greater language support. Approximately a quarter also suggested that training and materials delivered in their local language would be of value to their organisation. Many free text comments also expressed a desire for training, information and materials in local languages.

To meet this demand, in 2018 APNIC offered respondents the opportunity to complete the Survey in multiple languages, and in 2020 the number of languages was increased. Up from eight in 2018, the 2020 Survey was translated into 15 languages and 35% of responses were provided in a language other than English.

Conclusion

Interview feedback suggests that APNIC is very well regarded, and although there are always suggestions for improvement, APNIC is widely respected.

Survey feedback confirms this, with over nine in 10 (92%) respondents agreeing that APNIC enjoys the respect of the community. Notably, 43% of all respondents strongly agreed that APNIC is respected in the community. A majority of respondents (89%) are also satisfied that APNIC is sufficiently open and transparent in its activities.

APNIC's position as a neutral community participant, combined with the regard in which it is widely held, puts APNIC in a unique position to provide value to the Internet community. Reflecting this, the Survey continues to elicit demand from Survey participants for APNIC to support Members and other Stakeholders through training, knowledge building, collaboration and sharing of information, case studies and experiences.

Key findings



Favourable endorsement of APNIC continues to rise

Two thirds (66%) of respondents speak highly of APNIC, up from 56% in 2018 and 41% in 2016.

Further, those who previously indicated ambivalence, now speak positively about APNIC. Very few speak negatively about the organisation.



More respondents have attended APNIC training

Attendance at all forms of APNIC training has risen from 27% of Survey respondents in 2018 to 41% this year. Satisfaction with training, which was already high, has risen to 97%.

Online training activities offer the most value, with online Virtual Labs (54%) and online, self-paced training (45%) preferred by respondents.



Awareness and adoption of RPKI has improved

Respondents use of RPKI services has increased from 10% in 2018 to 27% in 2020. Seven in 10 respondents were aware of RPKI, and 22% have already deployed it.

Satisfaction with RPKI services is up 5%, with 94% providing a positive satisfaction rating.

Key findings



IPv6 Uptake

Reported full deployment of IPv6, although still low, has risen to one in five (20%) respondent organisations. This is up from 15% in 2016 and 2018.

At 36%, organisations in East Asia are significantly more likely to report they have IPv6 fully deployed than organisations in other sub-regions.



Encouraging participation

Over a third (36%) of respondents believe that additional focus on language support would encourage greater participation in APNIC activities.

Other suggestions to boost participation included promotion of activities to build awareness, enhanced remote access capabilities, and financial support.

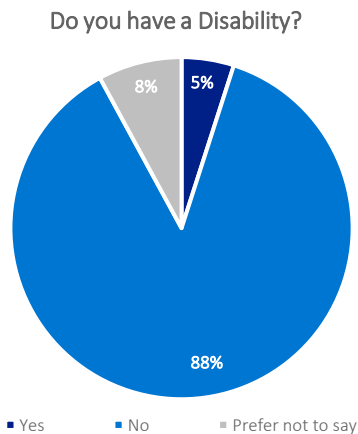
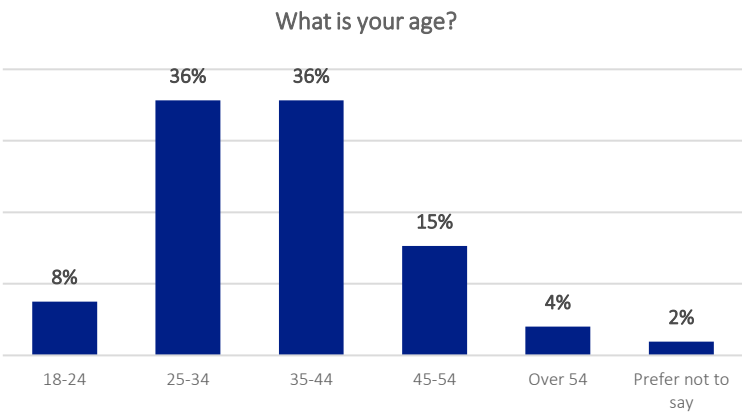
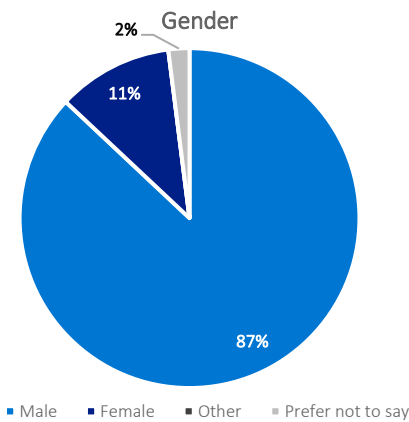


Assistance with Internet development

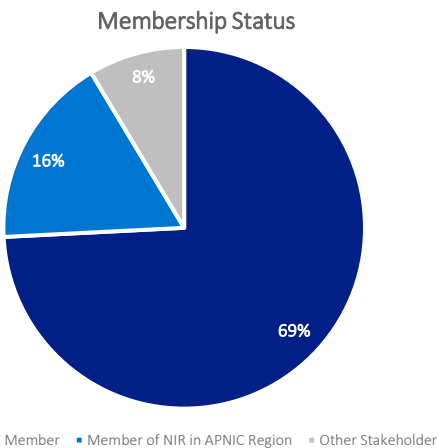
Emphasising the diversity of the APNIC community, opinions were divided about where APNIC should focus its efforts in Internet development.

While APNIC Members, LDEs and those in South Asia want a focus on supporting IXPs, NOGs and CDN caches, other Stakeholders, developed and developing economies and those in Oceania would prefer a focus on CERTs.

Sample



English Proficiency	Count	%
I am fluent in English	683	42%
I can understand most English and have English conversations comfortably	511	31%
I can understand some English and have basic English conversations	351	22%
I understand little English and need assistance	79	5%



Region	Count	%
East Asia	255	16%
Oceania	296	18%
South East Asia	439	27%
South Asia	562	35%
Non APNIC Region	72	4%

Development Status	Count	%
Least Developed Economy (LDEs)	476	29%
Other (Developed or Developing)	1,148	71%

			2016		2018		2020	
Code	Name	Economic Classification	Count	%	Count	%	Count	%
East Asia								
CN	China	Developing	170	13%	107	9%	68	4%
HK	Hong Kong Special Administrative Region of China	Developing	39	3%	53	4%	25	2%
JP	Japan	Developed	24	2%	63	5%	50	3%
KR	Republic of Korea	Developing	2	0%	11	1%	10	1%
MN	Mongolia	Developing	9	1%	71	6%	50	3%
MO	Macao Special Administrative Region of China	Developing	-	-	2	0%	6	0%
TW	Taiwan	Developing	24	2%	30	2%	46	3%
Sub-total			268	23%	337	27%	255	16%
Oceania								
AS	American Samoa	Developing	1	0%	1	0%	0	0%
AU	Australia	Developed	202	15%	132	11%	136	8%
CK	Cook Islands	Developing	2	0%	1	0%	2	0%
FJ	Fiji	Developing	4	0%	10	1%	23	1%
FM	Micronesia	Developing	1	0%	-	-	0	0%
GU	Guam	Developing	1	0%	1	0%	6	0%
KI	Kiribati	LDE	-	-	1	0%	2	0%
MH	Marshall Islands	Developing	-	-	1	0%	2	0%
MP	Northern Mariana Islands	Developing	1	0%	-	-	0	0%
NC	New Caledonia	Developing	2	0%	6	0%	4	0%
NF	Norfolk Island	Developing	-	-	2	0%	0	0%
NR	Nauru	Developing	1	0%	2	0%	1	0%
NU	Niue	Developing	1	0%	1	0%	0	0%
NZ	New Zealand	Developed	47	4%	42	3%	58	4%
PG	Papua New Guinea	Developing	10	1%	10	1%	30	2%
PW	Palau	Developing	2	0%	1	0%	0	0%
SB	Solomon Islands	LDE	1	0%	22	2%	6	0%
TK	Tokelau	Developing	1	0%	1	0%	0	0%
TO	Tonga	Developing	2	0%	7	1%	7	0%
TV	Tuvalu	LDE	1	0%	1	0%	1	0%
VU	Vanuatu	LDE	2	0%	4	0%	5	0%
WF	Wallis & Fortuna Islands	Developing	-	-	1	0%	0	0%
WS	Samoa	Developing	1	0%	4	0%	13	1%
Sub-total			283	24%	251	20%	296	17%
SE Asia								
BN	Brunei Darussalam	Developing	1	0%	3	0%	5	0%
ID	Indonesia	Developing	49	4%	51	4%	74	5%
KH	Cambodia	LDE	15	1%	18	1%	18	1%
LA	Lao People's Democratic Republic	LDE	4	0%	4	0%	4	0%
MM	Myanmar	LDE	11	1%	24	2%	111	7%
MY	Malaysia	Developing	39	3%	36	3%	35	2%
PH	Philippines	Developing	43	3%	48	4%	114	7%
SG	Singapore	Developing	27	2%	27	2%	20	1%
TH	Thailand	Developing	18	1%	41	3%	39	2%
TL	Timor-Leste	LDE	2	0%	2	0%	4	0%
VN	Viet Nam	Developing	48	4%	5	0%	15	1%
Sub-total			257	22%	259	21%	439	27%

			2016		2018		2020	
Code	Name	Economic Classification	Count	%	Count	%	Count	%
South Asia								
AF	Afghanistan	LDE	5	0%	8	1%	9	1%
BD	Bangladesh	LDE	94	7%	138	11%	298	18%
BT	Bhutan	LDE	7	1%	7	1%	19	1%
IN	India	Developing	142	11%	82	7%	109	7%
IO	British Indian Ocean Territory	Developing	-	-	-	-	0	0%
LK	Sri Lanka	Developing	10	1%	16	1%	28	2%
MV	Maldives	Developing	1	0%	4	0%	3	0%
NP	Nepal	LDE	26	2%	65	5%	60	4%
PK	Pakistan	Developing	36	3%	36	3%	36	2%
Sub-total			321	27%	356	29%	562	35%
Non APNIC Region								
	Algeria				1	0%	1	0%
	Asia Pacific Regional						1	0%
	Benin						2	0%
	Canada						3	0%
	Croatia						1	0%
	Democratic Republic of Congo						2	0%
	Denmark						2	0%
	Egypt						1	0%
	Ethiopia						1	0%
	France						1	0%
	Germany		1	0%	1	0%	6	0%
	Haiti						1	0%
	Ireland		-	-			1	0%
	Israel		2	0%	2	0%	1	0%
	Italy		-	-	1	0%	1	0%
	Mexico						3	0%
	Netherlands		6	0%	2	0%	3	0%
	Nicaragua						1	0%
	Niger						1	0%
	Nigeria		1	0%	1	0%	1	0%
	Oman						1	0%
	Panama						1	0%
	Poland						1	0%
	Saudi Arabia						2	0%
	Slovenia		-	-	1	0%	1	0%
	Sweden						1	0%
	United Arab Emirates						1	0%
	United Kingdom						3	0%
	United States of America		16	1%	22	2%	26	2%
	Zambia						1	0%
Subtotal			*46	4%	*38	*3%	72	4%
Total			1,175	100%	1,241	100%	1,624	100%

* 2016 and 2018 Response subtotal for Non-APNIC Region includes responses from economies not listed as no responses were received in 2020

		2018	2020
Translated Surveys Completed			
Code	Language		
BD	Bangladesh (Bengali)	41	157
CN	Chinese Simplified	101	75
CN	Chinese Traditional	56	59
ID	Indonesian	43	62
IN	Indian (Hindi)		3
JP	Japanese	60	45
KR	Korean	9	8
MN	Mongolian	49	39
MY	Malaysian		4
MM	Myanmar (Burmese)		52
NP	Nepali		10
PH	Philippines (Tagalog)		7
TH	Thai	30	29
PK	Urdu		4
VN	Vietnamese		14
Total		389	568

	2016	2018	2020
Organisation Type			
Sample Size	1,169	1,241	1,624
Internet Service Provider (ISP)	32%	34%	34%
Academic/Educational/Research	9%	11%	15%
Telecommunications / Mobile Operator	11%	13%	11%
Other	7%	7%	7%
Government/Regulator/Municipality	5%	6%	6%
Hosting / Data Centre	11%	7%	5%
Banking/Financial	6%	5%	4%
Enterprise/Manufacturing/Retail	3%	3%	4%
Non-profit/NGO/Internet community	4%	4%	3%
Software Vendor	3%	3%	3%
Media / Entertainment	2%	2%	2%
Domain Name Registry / Registrar	2%	1%	1%
NREN/Research network	1%	1%	1%
Infrastructure (transport/hospital)	1%	1%	1%
Internet Exchange Point (IXP)	1%	1%	1%
Hardware Vendor	1%	1%	1%
Industrial (construction, mining, oil)	1%	1%	1%

	2016	2018	2020
Position			
Sample Size	1,173	1,241	1,624
IT/ICT Manager or equivalent	34%	33%	
Technical Operations	29%	32%	
Executive Director/ Managing Director/ CEO/CFO/CTO	19%	18%	
Administration	6%	4%	
Other	6%	8%	
Business Development	3%	2%	
Commercial Operations	2%	2%	
Software Development	2%	2%	

Detailed Results

Service Usage & Satisfaction

In order to measure service usage and satisfaction, the first section of the Survey asked respondents to indicate how often they had interacted with APNIC over the last two years, which services they had used and how satisfied they were with each of the APNIC products, services and activities they had experienced.

After rating their experience using individual APNIC services, respondents were also asked to rate the overall quality and value of APNIC services and Membership.

Respondents were also asked to indicate if they face any barriers to participation in APNIC activities, and what they believe APNIC can do to encourage greater participation and involvement in community activities.



APNIC contact frequency

Overall, 71% of respondents have used APNIC services or interacted with APNIC over the last two years. This compares to 67% in 2018 and 77% in 2016.

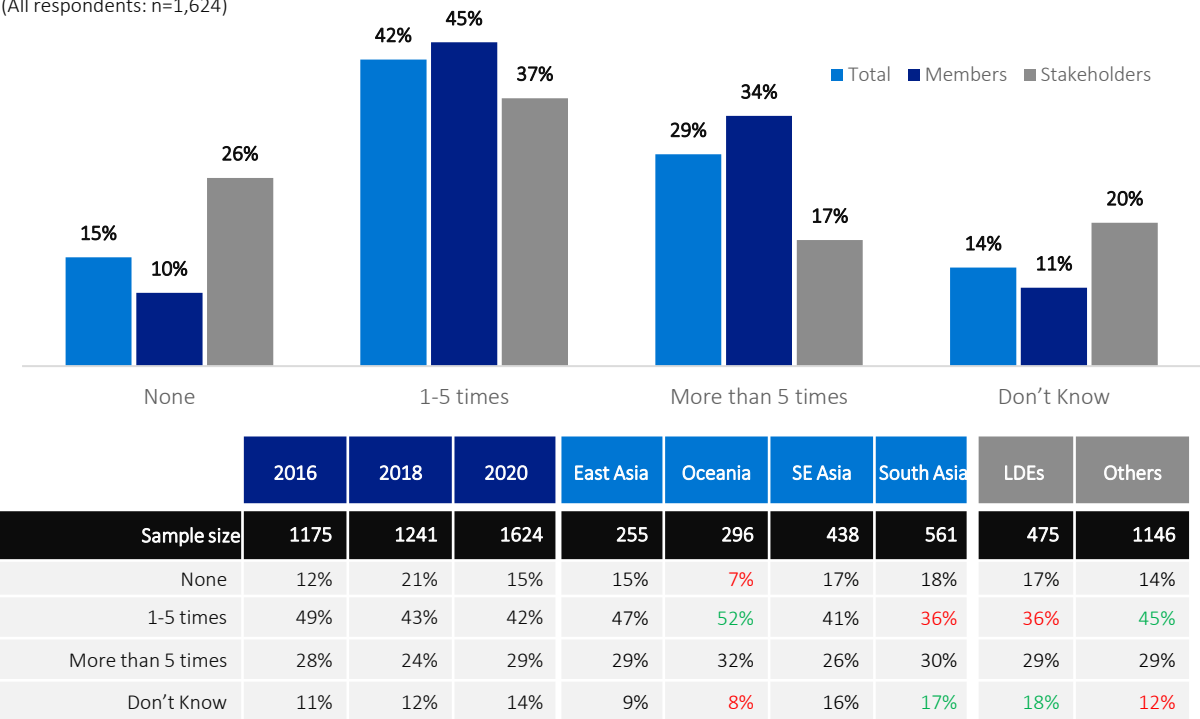
As expected, APNIC Members were significantly more likely to have used APNIC services or contacted APNIC for support than other respondents. Consistent with 2018, nearly eight in 10 (79%) APNIC Members had used an APNIC service or interacted with APNIC in some way at least once over the last two years. This compares to 54% of Members of NIRs or other Stakeholders (up from 41% in 2018).

Suggesting greater engagement with APNIC, 45% of Members and Account Holders had interacted with APNIC between one and five times and 34% had interacted with APNIC more than five times over the last two years (compared to 49% and 28% in 2018 respectively). Only 10% of Members and 26% of Members of NIRs or other Stakeholders had no contact with APNIC over the last two years, down from 13% and 43% respectively in 2018.

Respondents from Oceania were again the most likely to have interacted with APNIC, with 84% indicating they had contact with APNIC at least once (up from 81% in 2018). Survey respondents from South East Asia (67%) and South Asia (66%) were less likely than counterparts from other regions to have engaged with APNIC over the past two years.

Respondents from the least developed economies were less likely to have interacted with APNIC, with 65% indicating they have had at least one interaction over the last two years. This compares to 74% of respondents from developed or developing economies.

How many times have you used an APNIC service, contacted or interacted with APNIC in the last 2 years? (All respondents: n=1,624)



Note: Segments exclude respondents from non-APNIC regions included in the 'Total'
'Other' segment includes developed and developing economies

Significantly higher / lower than total



APNIC service usage

APNIC Services used by respondents over the last 2 years .

(Have used, interacted or contacted APNIC in the last 2 years: Base n=1,378; Total mentions: 4,721)

	2018			2020			
	Total	Members	Stakeholders	Total	Members	Stakeholders	Change 2018-2020
Sample Size	1,241	905	336	1,624	1,120	504	
* MyAPNIC	62%	62%	--	69%	69%	-	7%
APNIC website	76%	77%	70%	60%	56%	70%	-16%
APNIC Whois Database	56%	56%	54%	52%	55%	44%	-4%
* IP address or AS number resource application	41%	41%	-	42%	42%	-	1%
APNIC training (face to face or online)	27%	26%	32%	41%	39%	45%	14%
* APNIC helpdesk	38%	38%	-	37%	37%	-	-1%
APNIC Blog	44%	43%	48%	33%	31%	37%	-11%
* Resource Certification (RPKI)	10%	10%	-	27%	27%	-	17%
APNIC Conference, APRICOT or another event	25%	24%	30%	27%	24%	34%	2%
* New membership account	45%	45%	-	25%	25%	-	-20%
Met with APNIC representative	21%	21%	23%	22%	19%	28%	1%
APNIC EC Election	NA	NA	NA	20%	20%	-	-
* APNIC Reverse DNS	20%	20%	-	18%	18%	-	-2%
* IPv4 address transfer (as source or recipient)	13%	13%	-	16%	16%	-	3%
Presentation by APNIC representative	18%	16%	23%	16%	12%	25%	-2%
** Contacted APNIC with a query	16%	-	16%	13%	-	13%	-3%
APNIC Internet directory	NA	NA	NA	11%	9%	18%	-
APNIC Annual Report	NA	NA	NA	10%	10%		-
Special Interest Group (SIGs)	9%	7%	14%	8%	6%	13%	-1%
APNIC Foundation activities	NA	NA	NA	7%	5%	11%	-
APNIC Policy Development Process	6%	5%	9%	6%	5%	9%	-
APNIC RDAP service	NA	NA	NA	4%	4%	-	-
APNIC NetOX	NA	NA	NA	2%	2%	2%	-
None of these	3%	1%	7%	2%	1%	5%	-1%

* Option not offered to Stakeholder respondents

** Option not offered to Member respondents

Significantly higher / lower than total

MyAPNIC is the most used of APNIC’s services. Up 7% from 2018, 69% of respondents have used MyAPNIC. A majority of respondents have also used the Whois Database over the last two years, with usage broadly consistent with prior surveys at 52%. The proportion of respondents contacting the APNIC helpdesk was also consistent with 2018, at 37%.

While a majority of respondents report visiting the APNIC website over the last two years, at 60%, this is down from 76% in 2018. Survey respondents readership of the APNIC Blog is also lower, down 11% to 33% of respondents in 2020. It should be noted that this is reported usage by survey respondents, and may not reflect the wider APNIC communities use of these services.

Positively, engagement with APNIC training increased significantly. Up from just over a quarter of respondents in 2018, over four in 10 (41%) respondents in 2020 indicated that had attended training over the last two years. This increases to 45% amongst Members of NIRs and other Stakeholders.

While a similar proportion of respondents applied for IP addresses, at 42%, fewer received (31%) addresses allocations than two years ago (45%). At 16%, IP address transfers were completed by a broadly consistent proportion of respondents. Usage of RPKI increased significantly, from 10% of respondents in 2018 to 27% in 2020. This reflects the feedback in the interviews that were conducted, where many participants spoke of the use of RPKI for routing security.

Conference attendance (24%), meetings with APNIC representatives (19%), participation in SIGs (6%) and policy development activities (5%) were broadly consistent with the levels reported in 2016 and 2018.

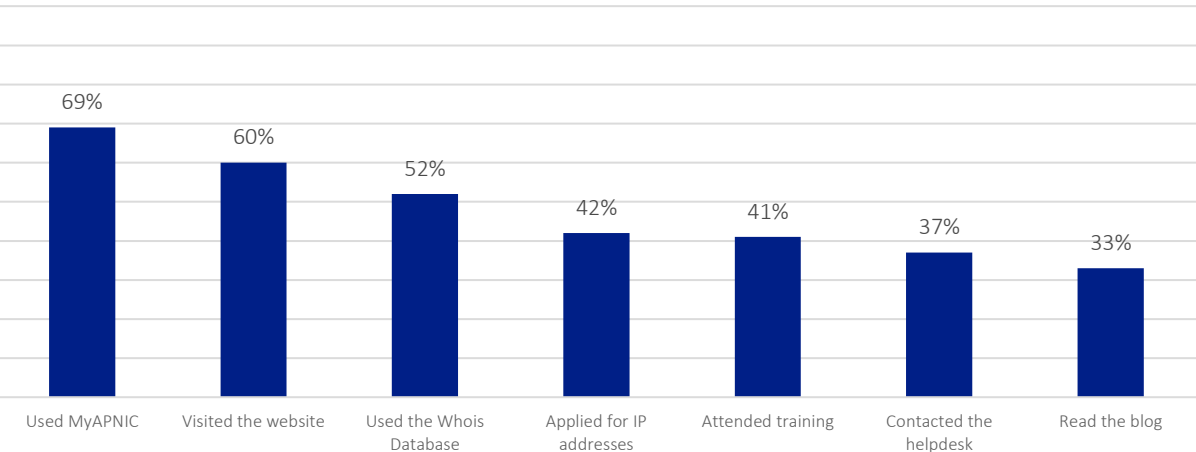
From a sub-regional perspective, APNIC training services are more likely to be attended by respondents in South East Asia and Oceania (48% and 42% respectively). Respondents from South Asia were more likely than those from other regions to have contacted the Helpdesk (46%), used RPKI (32%) or received an IP address allocation (31%), while respondents in East Asia were more likely to have attended Special Interest Group (SIG) meetings and events, and to have read the APNIC Annual Report. MyAPNIC is more widely used in Oceania than other sub-regions.

At 46%, the APNIC Helpdesk is significantly more likely to be used by respondents from LDEs than those from developed or developing economies. Respondents from LDEs were also more likely to have used MyAPNIC (76%), RPKI (36%) and to have participated in the APNIC EC Election (39%) and SIG meetings and events (10%).

Most Used APNIC Services

Over the last two years, which of the following APNIC products, services or initiatives have you used, participated in or accessed:

(Base n=1,624; Total mentions: 4,721)



APNIC services used by respondents over the last 2 years by classification and region for 2020.

(% have used, interacted or contacted APNIC in the last 2 years: Base N=1,378; Total mentions: 4,721)

(See previous page for breakdown by relationship with APNIC)

	Total	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	1624	255	296	439	562	476	1148
* MyAPNIC	69%	61%	80%	57%	74%	76%	66%
APNIC website	60%	56%	63%	54%	65%	60%	59%
APNIC Whois database	52%	85%	56%	48%	52%	51%	53%
* IP address or AS number resource application	42%	38%	41%	40%	45%	44%	40%
APNIC training (face-to-face or online)	41%	31%	42%	48%	40%	44%	39%
* APNIC Helpdesk	37%	31%	36%	30%	46%	46%	34%
APNIC Blog	33%	30%	32%	32%	36%	37%	31%
* Resource certification (RPKI)	27%	27%	21%	23%	32%	36%	22%
APNIC Conference, APRICOT or another APNIC event	27%	28%	24%	26%	28%	30%	25%
* New membership account	25%	21%	23%	20%	31%	30%	23%
Met with an APNIC representative	22%	21%	24%	19%	24%	15%	21%
* APNIC's EC election	20%	15%	8%	13%	36%	39%	12%
* APNIC reverse DNS service (as an address holder)	18%	19%	16%	15%	19%	19%	18%
* IPv4 address transfer (as source or recipient)	16%	18%	15%	13%	17%	18%	15%
Presentation by APNIC representative	16%	13%	18%	15%	15%	15%	16%
**Contacted APNIC with a query	13%	8%	23%	11%	13%	10%	14%
APNIC Internet Directory	11%	14%	9%	9%	13%	11%	11%
* APNIC Annual Report	10%	16%	10%	5%	10%	10%	10%
Special Interest Groups (SIGs)	8%	9%	7%	4%	11%	10%	7%
APNIC Foundation activities (of any kind)	7%	5%	8%	7%	7%	6%	7%
APNIC Policy Development Process	6%	27%	5%	4%	8%	8%	5%
* APNIC RDAP service	4%	4%	2%	3%	5%	4%	3%
APNIC NetOX	2%	3%	1%	2%	3%	2%	2%
None of these	2%	1%	1%	4%	2%	3%	2%

Note: Segments exclude respondents from non-APNIC regions included in the 'Total'
'Other' segment includes developed and developing economies

Significantly higher / lower than total



Assessment of APNIC services

Having identified the APNIC services used, the next question asked respondents to rate their satisfaction with those services, on a seven point scale from Very Poor (1) to Excellent (7). Results are presented to show the both the top three rating (percentage rating a 5, 6 or 7) as well as the mean, or average, score. On the following pages comparisons between different economy type and sub-regions and to ratings from the 2018 Survey (where comparable) are provided.

Overall, satisfaction with individual services is high and for most services has improved since 2018. Consistent with surveys conducted in 2016 and 2018, respondents are most satisfied with the personal services and support provided by APNIC. Of those respondents who had met personally with an APNIC representative, 97% rated the experience positively, with 63% rating their experience as excellent. A similar proportion (96%) rated APNIC presentations they had attended highly. Ninety-five percent (95%) of respondents are satisfied with the support they received from the APNIC Helpdesk, with half providing an excellent rating.

Positively, APNIC training was the second highest rated service, with 97% rating it as positive – up 3% from 2018. Of respondents providing a positive score, 52% rated APNIC training as excellent. The average rating for training improved from 6.18 to 6.38.

While fewer respondents have experience of APNIC Foundation activities, those who have rate their involvement with the Foundation highly. Ninety-six percent (96%) provided a positive rating of Foundation activities.

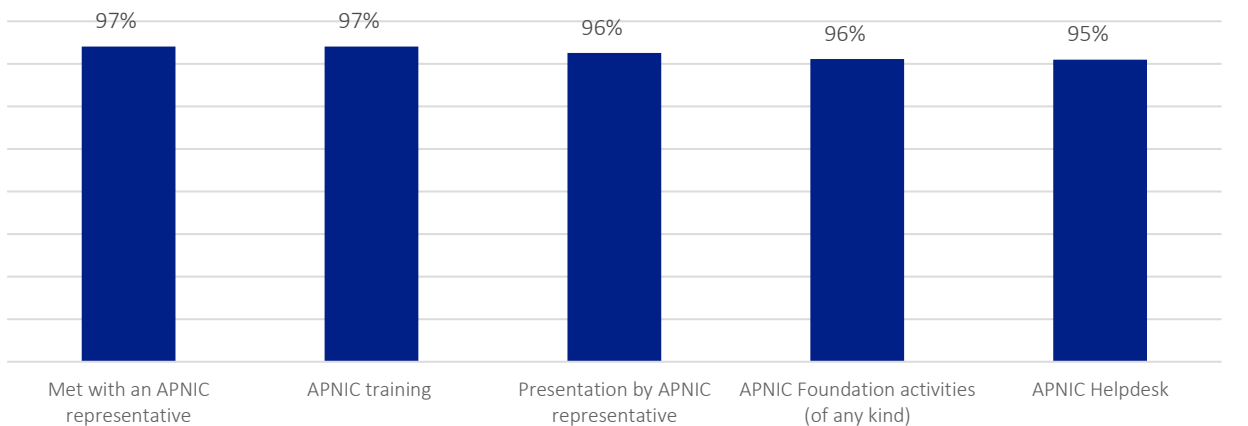
Respondents’ rating of their experience of the core APNIC services of IP address applications and allocations remained consistent, while satisfaction with the Whois database, MyAPNIC, reverse DNS and Helpdesk assistance improved since 2018. A majority of respondents rated their experience of IP address and AS resource application processes (89%) favourably, and 90% were satisfied with the IP allocation process. Satisfaction with MyAPNIC (93%) and the Whois Database (93%) remained high, while satisfaction with RPKI improved significantly (up from 89% in 2018 to 94% in 2020).

Satisfaction with the APNIC Website and APNIC Blog has improved. Up from 90% in 2018, both services attracted a positive rating of five or above from 93% of respondents in 2020.

Top Rated APNIC Services

Thinking about the APNIC services and activities you have used or undertaken, how would you rate your experience?

(Have Used APNIC Service. Top 3 Box Score Base n=1,379, n=various)



Thinking about the APNIC services and activities you have used or undertaken, how would you rate your experience?

(Have Used APNIC Service. Top 3 Box Score (% Above Average, Good, Excellent) (Base n= 1,379, n=various)

	Top 3 Box Satisfaction Scores				Mean Scores			
	2016	2018	2020	Change	2016	2018	2020	Change
Sample	1175	1241	1624		1175	1241	1624	
Met with an APNIC representative	92%	97%	97%	-	6.27	6.43	6.51	+0.08
APNIC training (face-to-face or online)	91%	94%	97%	+3%	6.00	6.18	6.38	+0.20
Presentation by APNIC representative	90%	97%	96%	-1%	5.96	6.31	6.37	+0.06
APNIC Foundation activities (of any kind)	N/A	N/A	96%	-	N/A	N/A	6.24	-
APNIC Helpdesk	91%	93%	95%	+2%	6.19	6.16	6.33	+0.17
Special Interest Groups (SIGs)	84%	97%	94%	-3%	5.67	6.06	6.05	-0.01
APNIC Conference, APRICOT or another APNIC event	92%	98%	94%	-4%	6.05	6.35	6.33	-0.02
Contact with APNIC	80%	90%	94%	+4%	5.83	6.26	6.31	+0.05
Resource certification (RPKI)	85%	89%	94%	+5%	5.85	5.94	6.26	+0.32
APNIC reverse DNS service (as an address holder)	92%	91%	93%	+2%	6.05	6.03	6.13	+0.10
APNIC website	86%	90%	93%	+3%	5.78	5.92	6.16	+0.24
APNIC Whois database	92%	91%	93%	+2%	6.03	6.06	6.16	+0.10
MyAPNIC	90%	92%	93%	+1%	5.9	6.06	6.14	+0.08
APNIC NetOX	N/A	N/A	93%	-	N/A	N/A	6.21	-
APNIC Blog	81%	90%	93%	+3%	5.66	5.98	6.16	+0.18
IPv4 address transfer (as source or recipient)	83%	86%	92%	+6%	5.73	5.78	6.04	+0.26
APNIC Policy Development Process	85%	95%	92%	-3%	5.71	6.13	5.98	-0.15
IP address allocation	92%	89%	90%	+1%	6.11	6.06	6.08	+0.02
IP address or AS number resource application	93%	90%	89%	-1%	6.09	6.05	6.12	+0.07
APNIC Internet Directory	N/A	N/A	89%	-	N/A	N/A	6.06	-
APNIC's EC election	N/A	N/A	89%	-	N/A	N/A	6.03	-
APNIC Annual Report	N/A	N/A	87%	-	N/A	N/A	6.04	-
APNIC RDAP service	N/A	N/A	86%	-	N/A	N/A	6.08	-

Significantly higher / lower than total

In some cases, satisfaction with APNIC services varies between economies based on development status or sub-region.

Respondents from South Asia are significantly more satisfied than counterparts in other regions with the APNIC website (97%), the Whois database (98%) and MyAPNIC (98%). Conversely, respondents from East Asia (87%) were the least satisfied with the APNIC Whois database.

At 96%, the IP address application and allocation processes are more highly rated by respondents from South Asia. Conversely only 79% of Oceanic respondents were satisfied with the IP address application and allocation process, significantly lower than respondents in other regions.

Respondents in LDE's were significantly more likely to rate IP address applications and allocations (97%), the Whois Database (98%) and MyAPNIC (97%) as positive than respondents in developing or developed economies.

There were few suggestions about how APNIC could improve Member experiences with the services used. However, there were suggestions that "the website needs to improve in a lot of ways" and that "there are lots of good documentation for few things, however, it would be really great to see more improved documentation i.e RPKI, rDNS etc."

Thinking about the APNIC services and activities you have used or undertaken, how would you rate your experience?

(Have Used APNIC Service. Top 3 Box Score (% Above Average, Good, Excellent) (Base n= 1,379, n=various)

	Total	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Met with an APNIC representative	97%	93%	94%	99%	99%	100%	96%
APNIC training (face-to-face or online)	97%	98%	97%	97%	97%	98%	96%
Presentation by APNIC representative	96%	100%	94%	93%	100%	100%	95%
APNIC Foundation activities (of any kind)	96%	WH	91%	96%	100%	100%	94%
APNIC Helpdesk	95%	91%	92%	98%	98%	99%	94%
Special Interest Groups (SIGs)	94%	89%	94%	100%	94%	93%	95%
APNIC Conference, APRICOT or another APNIC event	94%	90%	90%	96%	98%	94%	94%
Contact with APNIC	94%	WH	88%	100%	93%	100%	93%
Resource certification (RPKI)	94%	85%	93%	97%	97%	97%	91%
APNIC reverse DNS service (as an address holder)	93%	90%	91%	100%	96%	97%	92%
APNIC website	93%	89%	94%	92%	97%	97%	92%
APNIC Whois database	93%	87%	89%	95%	98%	98%	91%
MyAPNIC	93%	87%	93%	91%	98%	97%	91%
APNIC NetOX	93%	WH	WH	WH	100%	100%	91%
APNIC Blog	93%	89%	94%	91%	94%	93%	92%
IPv4 address transfer (as source or recipient)	92%	93%	94%	85%	95%	98%	88%
APNIC Policy Development Process	92%	95%	85%	100%	91%	93%	91%
New membership account	90%	87%	81%	90%	96%	96%	87%
IP address or AS number resource application	89%	86%	79%	91%	96%	97%	86%
APNIC Internet Directory	89%	90%	81%	82%	97%	98%	86%
APNIC's EC election	89%	78%	88%	88%	94%	91%	85%
APNIC Annual Report	87%	88%	90%	85%	86%	83%	88%
APNIC RDAP service	86%	WH	WH	WH	100%	100%	78%

Note: Segments exclude respondents from non-APNIC regions included in the 'Total' 'Other' segment includes developed and developing economies

Significantly higher / lower than total
WH = Withheld, sample less than 101



Barriers to participation

To inform activities that may encourage greater access to services and activities, the Survey asked respondents about the main barriers to participation in APNIC community activities.

Unsurprisingly, cost and time top the list of barriers to participation. Nearly four in 10 (39%) respondents indicated that cost presents a barrier to participating in APNIC community activities. A similar proportion (34%) suggested a lack of time is a barrier to participation. Geographical constraints hinder greater participation amongst nearly three in 10 (29%) respondents.

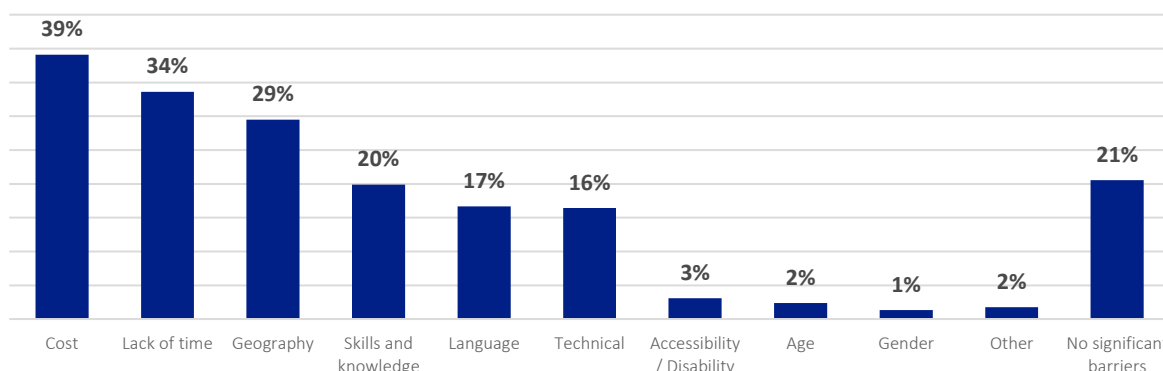
Respondents in East Asia are the least likely to suggest that cost is a barrier to participation in APNIC activities, instead being more likely to cite language barriers. At 36%, the proportion indicating that language is a barrier to participation is significantly higher amongst respondents from East Asia than all other APNIC regions.

Conversely, respondents from South Asia and LDEs are the most likely to indicate that cost is a barrier to participation, at 44% and 47% respectively. Lack of time to participate is most commonly cited by Oceanic respondents, at 56%.

Positively, over one in five (21%) respondents do not believe there are any significant barriers to participation in APNIC community activities.

What do you think are the main barriers to participation in APNIC community activities?

(Select up to three (3) responses. Base n= 1,624, n=various)



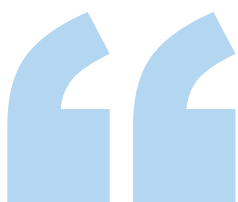
	Total	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample Size	1624	255	296	439	562	476	1148
Cost	39%	31%	39%	40%	44%	47%	36%
Lack of time to participate	34%	25%	56%	31%	27%	24%	38%
Geographical factors	29%	33%	28%	30%	28%	29%	30%
Skills and knowledge-related factors	20%	18%	19%	24%	20%	23%	19%
Language	17%	36%	4%	20%	13%	19%	16%
Technical challenges with remote participation	16%	12%	16%	20%	17%	18%	16%
Accessibility / Disability-related factors	3%	2%	1%	3%	5%	6%	2%
Age	2%	1%	1%	4%	3%	3%	2%
Gender	1%	1%	2%	2%	1%	1%	2%
Other	2%	2%	4%	1%	1%	1%	2%
No significant barriers to participation	21%	20%	18%	18%	23%	19%	21%

Note: Segments exclude respondents from non-APNIC regions included in the 'Total' 'Other' segment includes developed and developing economies

Significantly higher / lower than total

When asked to elaborate on any barriers to participation in APNIC community activities, respondents provided a variety of feedback. Most commonly respondents indicated that cost, language, time and geographic barriers prevented them from participating in APNIC activities. Several mentions were also made of the difficulties young professionals face in attending APNIC events.

- “The cost of participating should be further reduced” South Asia*
- “Not easy for budget approval from our company” East Asia*
- “APNIC technical should support language every country.” South East Asia*
- “Conference held at different countries, unable to participate because of location and only selected individuals are always attending training.” Oceania
- “Cost of travel specially to far places is a barrier for young people who do not get organization support.” South Asia
- “If APNIC could give more chances to youths, more youth will be involved, and they would get a chance to explore and learn more.” South Asia
- “Whilst remote participation is possible, it is not as beneficial as attending events in person. For in-person attendance, there are some cost-related factors, which relates to geographical-related factors.” Oceania



“The timing is not suitable for our region, if recording is shared with those participant who registered for that training, it will be a great service and more beneficial for community members”

South Asia





Encouraging greater participation

When asked what APNIC could do to encourage greater diversity of participation in community activities, language support was the most common response. Over a third (36%) of respondents believe that APNIC could place additional focus on language support.

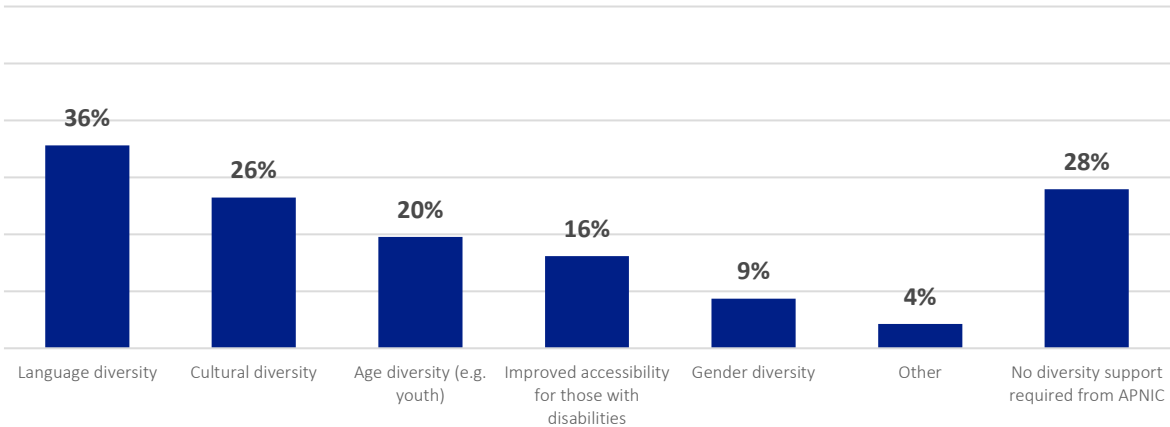
More than a quarter of respondents (26%) believe that APNIC could support greater cultural diversity, while 20% would like to see APNIC foster more involvement amongst young community members. While few respondents (9%) believe APNIC needs to place additional focus on activities that encourage gender diversity, it should be noted that 87% of respondents to the Survey were male.

As with the main barriers to participation, respondents from East Asia and South East Asia are more likely to indicate that language support is required from APNIC (55% and 43% respectively) than the other sub-regions.

Other suggestions to encourage participation were varied, with calls for increased promotion of activities to build awareness, enhanced remote access capabilities, financial support and increased geographical reach to improve access in different regions.

Nearly three in 10 respondents do not believe that APNIC should do anything to support greater diversity of participation in community activities.

Where should APNIC place additional focus to encourage greater diversity of participation in community activities? (N= 1,624, n=various)



	Total	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample Size	1624	255	296	439	562	476	1148
Language diversity	36%	55%	12%	43%	36%	42%	33%
Cultural diversity	26%	36%	23%	22%	29%	28%	26%
Age diversity	20%	18%	21%	21%	18%	18%	20%
Improved access for those with disabilities	16%	5%	12%	18%	23%	26%	12%
Gender diversity	9%	6%	15%	6%	8%	8%	9%
Other	4%	2%	7%	3%	5%	4%	5%
No diversity support required from APNIC	28%	21%	43%	26%	22%	18%	32%

Note: Segments exclude respondents from non-APNIC regions included in the 'Total'
'Other' segment includes developed and developing economies

Significantly higher / lower than total



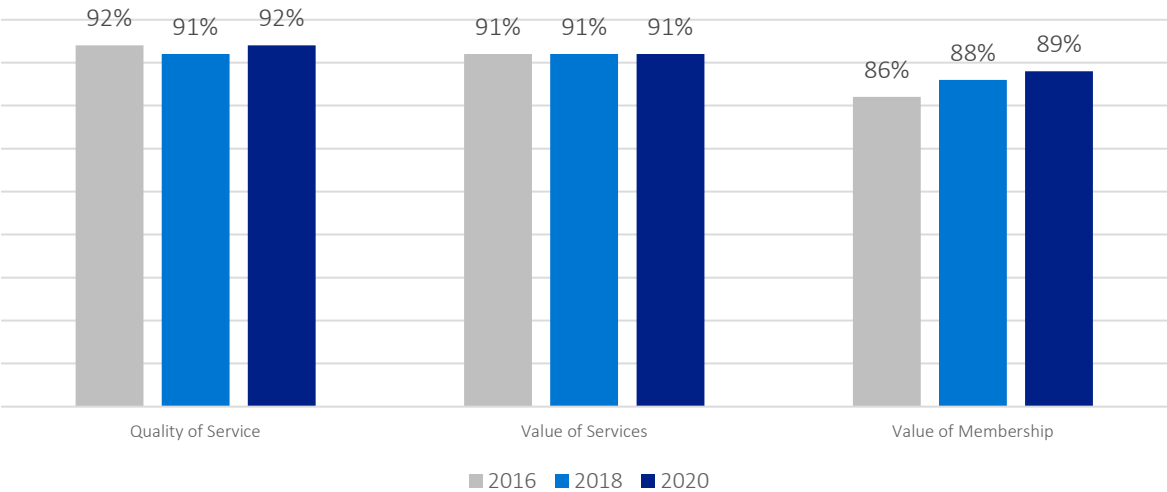
Overall satisfaction

After rating their experience using individual APNIC services, APNIC Members or Account Holders were asked to rate the overall quality and value of APNIC services and Membership on a seven point scale from Very Poor (1) to Excellent (7).

A majority of respondents rated the quality of service delivery positively, with 92% rating the quality of services at a five or higher. Ninety-one percent (91%) also provided a rating higher than neutral for the value of APNIC services. Slightly fewer (89%) rated the overall value of APNIC Membership as above average or better.

While overall positive ratings were broadly consistent with previous years across all three satisfaction dimensions, the proportion of respondents rating the quality of APNIC services as ‘excellent’ increased to 39%, up from 35% in 2018. Excellent ratings for service value were also up slightly, to 40% of Members.

Thinking about APNIC overall, how would you rate:
(Members only: n=1,119)



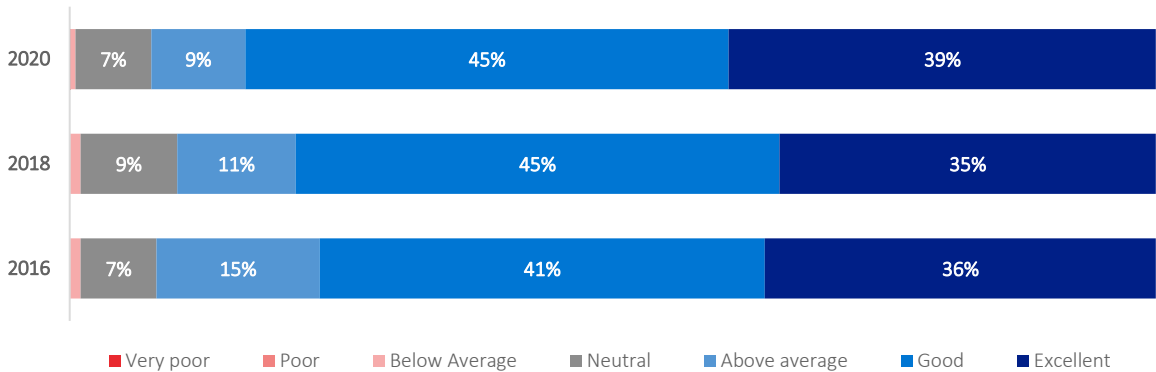
	Total	East Asia	Oceania	SE Asia	South Asia	LDE	Others
Sample Size	1119	165	217	296	397	353	766
Quality of Service	92%	88%	89%	93%	97%	97%	90%
Value of Services	91%	90%	84%	93%	96%	97%	89%
Value of Membership	89%	92%	79%	89%	96%	95%	86%

Note: Segments exclude respondents from non-APNIC regions included in the ‘Total’
‘Other’ segment includes developed and developing economies

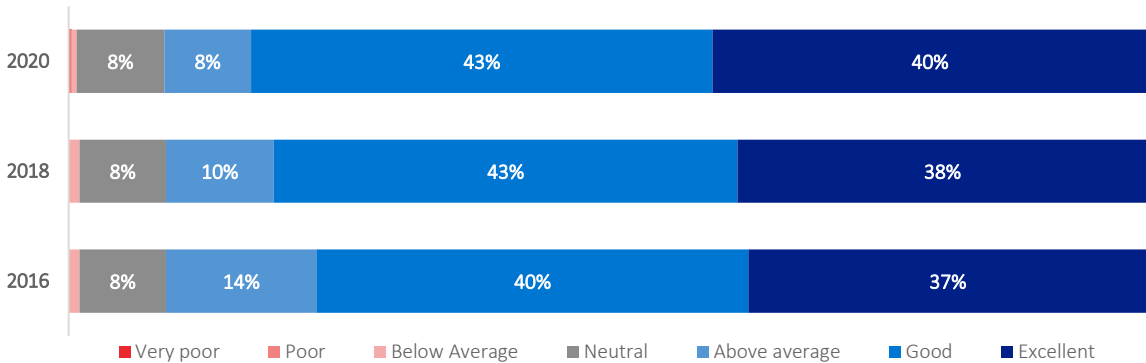
Significantly higher / lower than total

Thinking about APNIC overall, how would you rate:
(Members only: n=1,119)

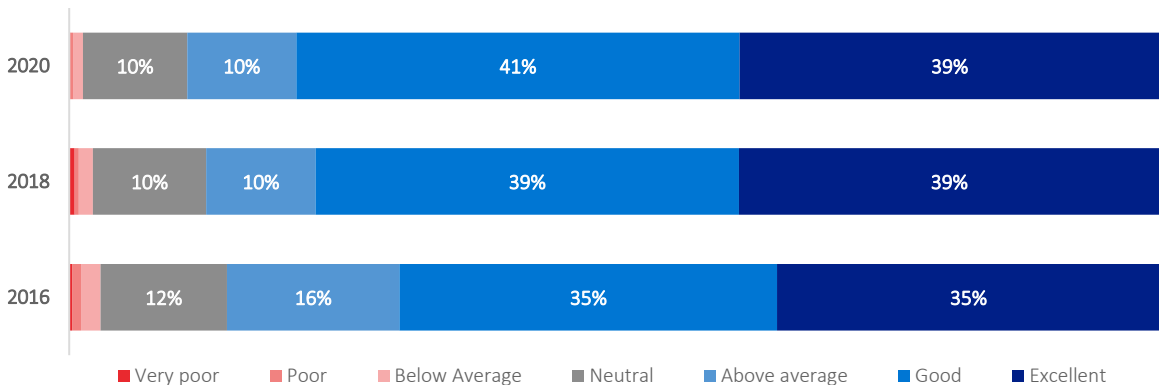
Quality of Services



Value of Services



Value of Membership



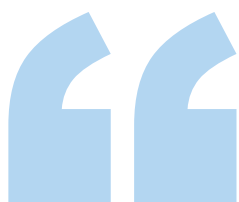
From a regional perspective, respondents in South Asia are the most satisfied, with 97% rating service quality positively, and 96% rating the value provided by APNIC services and membership highly. Of particular note, service quality and value were rated as excellent by over half of the respondents from South Asia (52% and 53% respectively). This is significantly higher than all other regions.

South East Asia respondents were also more likely to be satisfied with APNIC services than respondents from the other sub-regions. Ninety-three percent (93%) of respondents from South East Asia rated the quality and value of APNIC services positively.

Conversely, respondents from Oceania provided significantly lower ratings across all dimensions than respondents in other regions. In particular, only 79% of Oceanic members rated APNIC membership value above average or better, significantly lower than respondents in South Asia (96%), East Asia (92%) and South East Asia (89%).

Respondents from East Asia were less likely to provide a score of five or higher for APNIC service quality, with the quality of APNIC service delivery rated positively by 88% of respondents.

APNIC service quality and value is rated significantly higher by Members in LDEs than those from developed and developing economies. Satisfaction with the value provided by APNIC membership is also significantly higher amongst this group of Members.

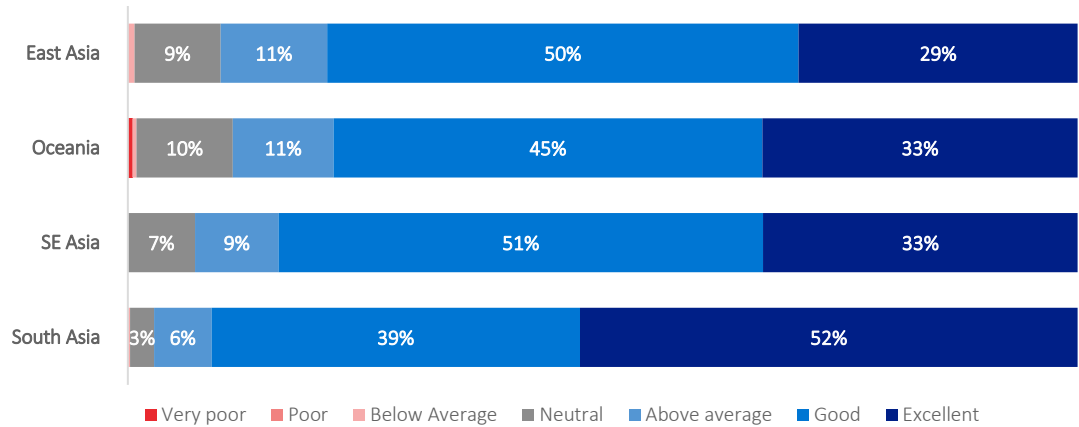


**“APNIC is doing very good job
by organizing workshops and
trainings”**

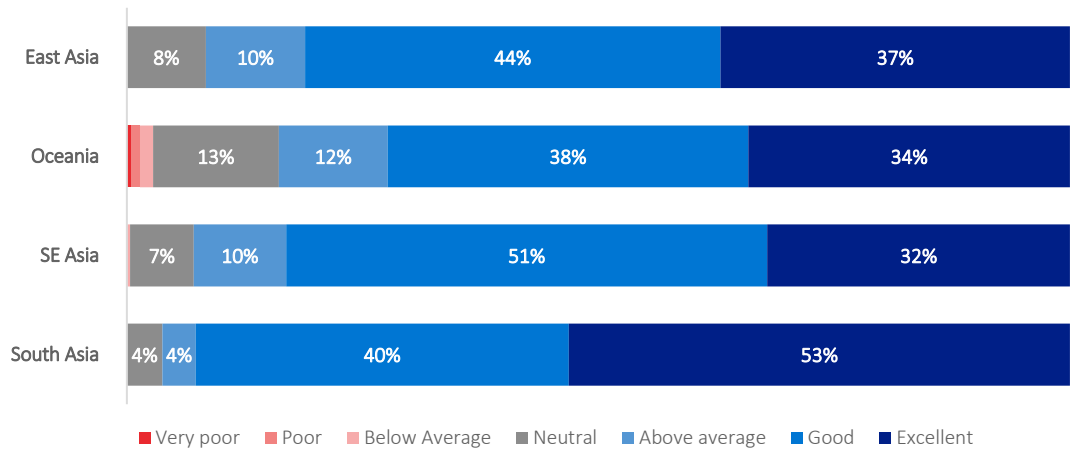
South East Asia



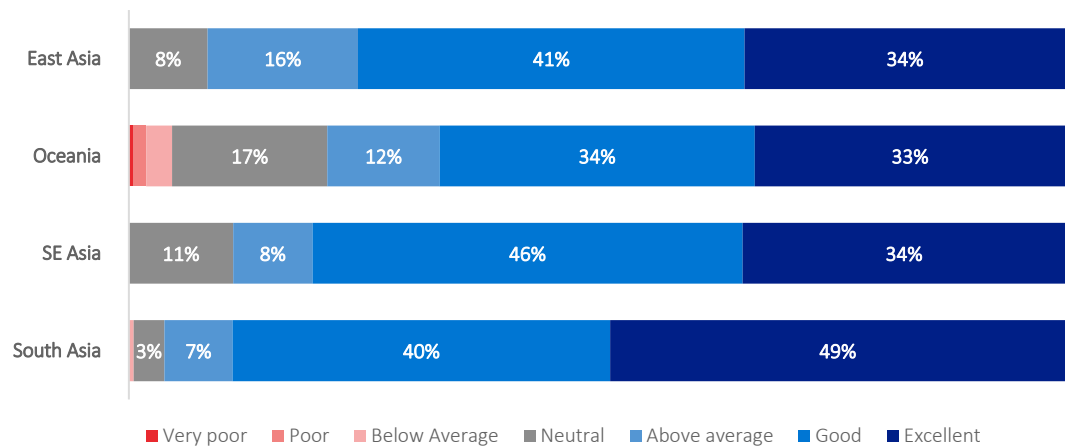
Quality of Service Delivery



Value of Services



Value of Membership

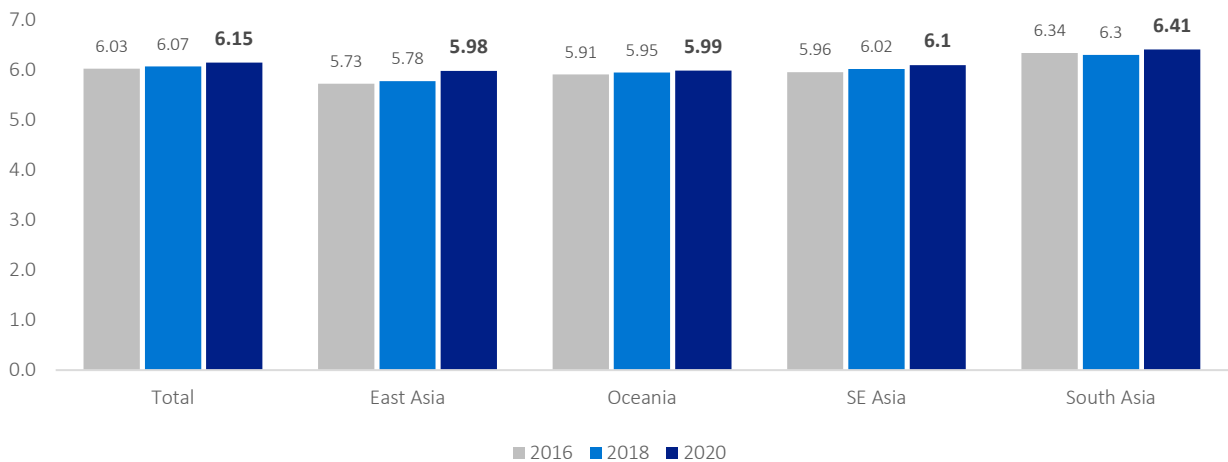


Respondents ratings of the quality and value of APNIC services and membership, by Region 2020.
(Members who have used APNIC services only: n=1,119)

Service Quality

Overall, the mean rating of the quality of APNIC service delivery improved in 2020, from 6.07 in 2018 to 6.15 in 2020.

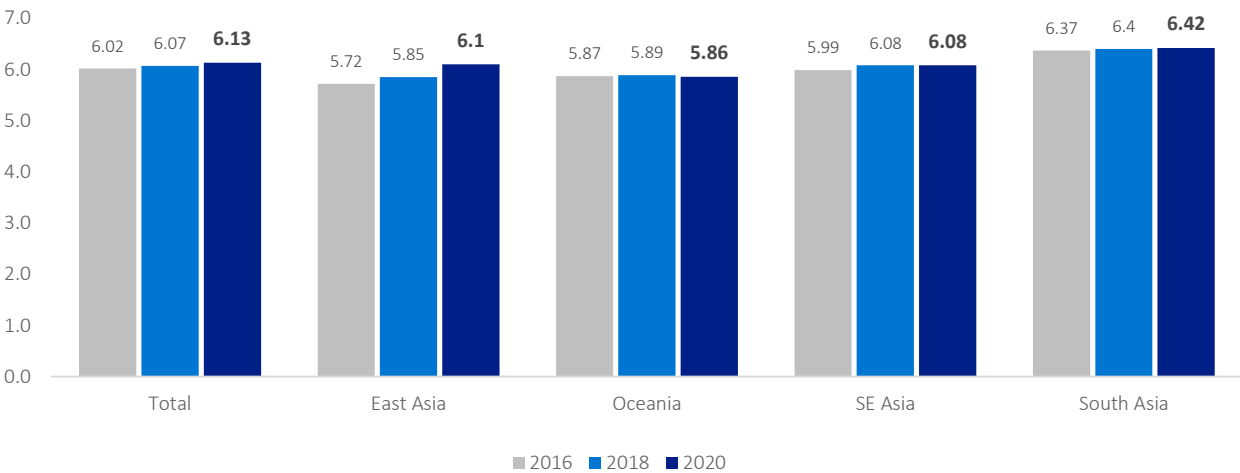
Satisfaction with the quality of service delivery improved across all APNIC sub-regions. In particular, the mean rating for APNIC service delivery increased from 5.78 to 5.98 in East Asia and was up from 6.30 to 6.41 in South Asia.



Service Value

Satisfaction with the value of APNIC services has also improved. At an overall level, the mean rating for APNIC service value increased from 6.07 in 2018 to 6.13 in 2020. While small improvements were noted in all APNIC sub-regions the largest increase was evident in East Asia, with the mean rating rising from 5.85 to 6.10.

Like in 2016 and 2018, the number of interactions respondents had with APNIC had a positive impact on satisfaction ratings, with more frequent users rating service quality and value more highly.



Respondents ratings of the quality and value of APNIC services, 2016-2020.
(Mean scores of Members who have used APNIC services only: 2016: n=733, 2018: n=788, 2020: n=1,119)



Stakeholder satisfaction

Members of NIRs or other Stakeholders were also asked to rate their experience dealing with APNIC. Ratings were provided on a seven point scale, from Very Poor (1) to Excellent (7).

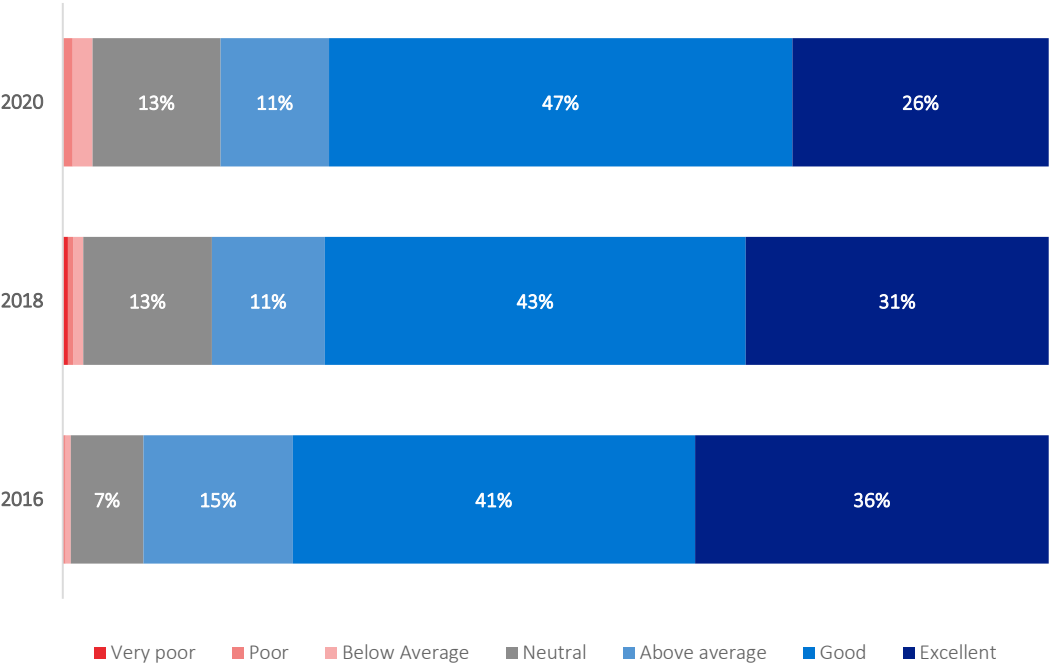
Broadly consistent with 2018, 84% of Members of NIRs or other Stakeholders rated their experience dealing with APNIC as positive, with 13% providing a neutral rating.

Respondents from Oceania provided the most positive feedback. Ninety percent (90%) of respondents from Oceania provided positive ratings, consistent with 2018. Most notably, 43% of Oceanic stakeholders rated their experience dealing with APNIC as ‘excellent’. This is significantly higher than respondents from all other sub-regions.

Down significantly from 94% 2018, 83% of stakeholders in South East Asia rated their experience dealing with APNIC as above average, good or excellent. Positive ratings were provided by 85% of respondents from South Asia. The lowest ratings were provided by respondents from East Asia, with 77% providing a positive rating.

Stakeholders from developed economies were more likely to rate their experience favourably, with 85% providing a positive rating. This compares to 80% of respondents in LDEs, which is down from 85% in 2018.

Overall, how would you rate your experience dealing with APNIC?
(Stakeholders who have used APNIC services only: 2016 n=292; 2018 n=192, 2020 n=502)





Governance

As in prior years, the Survey also asked respondents to assess APNIC Governance processes. Respondents were asked to indicate whether they believe APNIC is sufficiently open and transparent and whether it is respected in the Internet community.

Transparency

Transparency is one of APNIC’s declared values, and since 2014 the APNIC Survey has tested respondents satisfaction that APNIC is sufficiently open and transparent in its activities.

As in past years, there was majority agreement that APNIC is sufficiently open and transparent in its activities. Consistent with 2018, 89% of respondents are satisfied (ratings of above average, good or excellent) with APNIC’s openness and transparency.

Like in 2018, respondents in South Asia (94%) were the most likely to agree that APNIC is sufficiently open and transparent. Respondents in Oceania (85%) were the least likely to report satisfaction with APNIC’s transparency. Agreement levels were 87% in East Asia and 90% in South East Asia.

Respondents from LDEs (94%) were significantly more likely to agree that APNIC is sufficiently open and transparent than those in developed or developing (88%) economies.

	Total	East Asia	Oceania	SE Asia	South Asia	LDE	Others
Sample Size	1119	165	217	296	397	353	766
Top 3 Satisfaction	89%	87%	85%	90%	94%	94%	88%

Significantly higher / lower than total

Respect

Interview feedback suggests that APNIC is very well regarded in the Internet community, and although there are always suggestions for improvement, APNIC is held in high esteem.

Survey feedback confirms this, with over nine in 10 (92%) respondents agreeing that APNIC enjoys the respect of the community. Notably, 43% of all respondents strongly agreed that APNIC is respected in the community. This is consistent with 2018, when the corresponding proportions were 93% and 41%.

Respondents in South Asia (95%) were the most likely to agree that APNIC is respected in the Internet community. While this is significantly higher than respondents in other regions, over nine in 10 respondents agree that APNIC is respected in East Asia (90%), Oceania (91%) and South East Asia (93%).

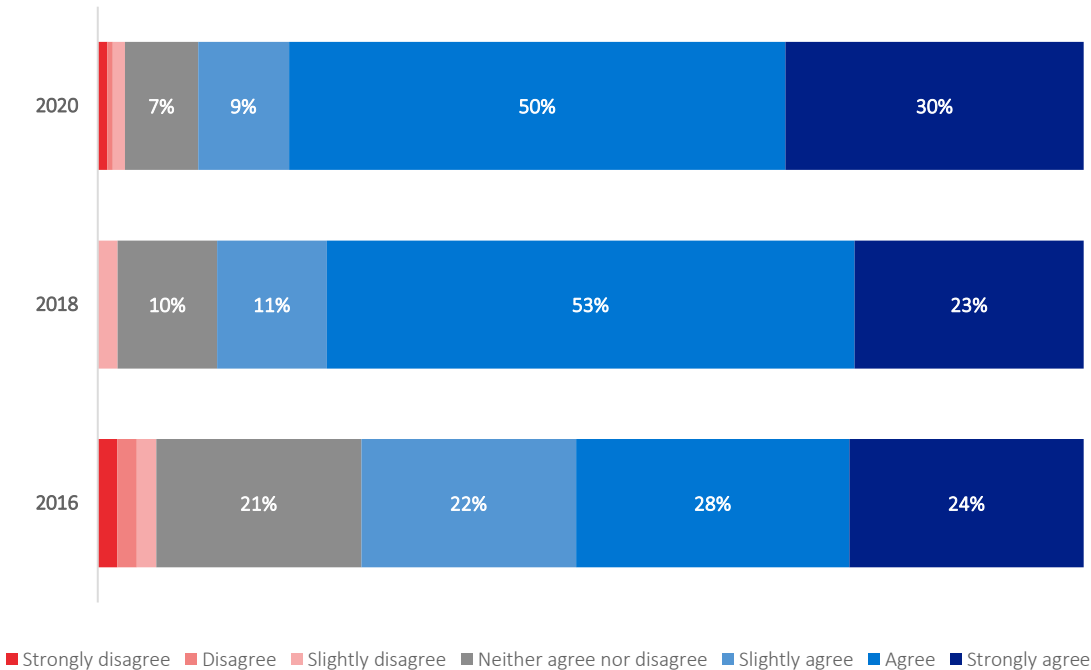
Respondents in developed economies (92%) were less likely to agree that APNIC is respected than respondents in LDEs (95%).

	Total	East Asia	Oceania	SE Asia	South Asia	LDE	Others
Sample Size	1119	165	217	296	397	353	766
Top 3 Satisfaction	92%	90%	91%	93%	95%	95%	92%

Significantly higher / lower than total

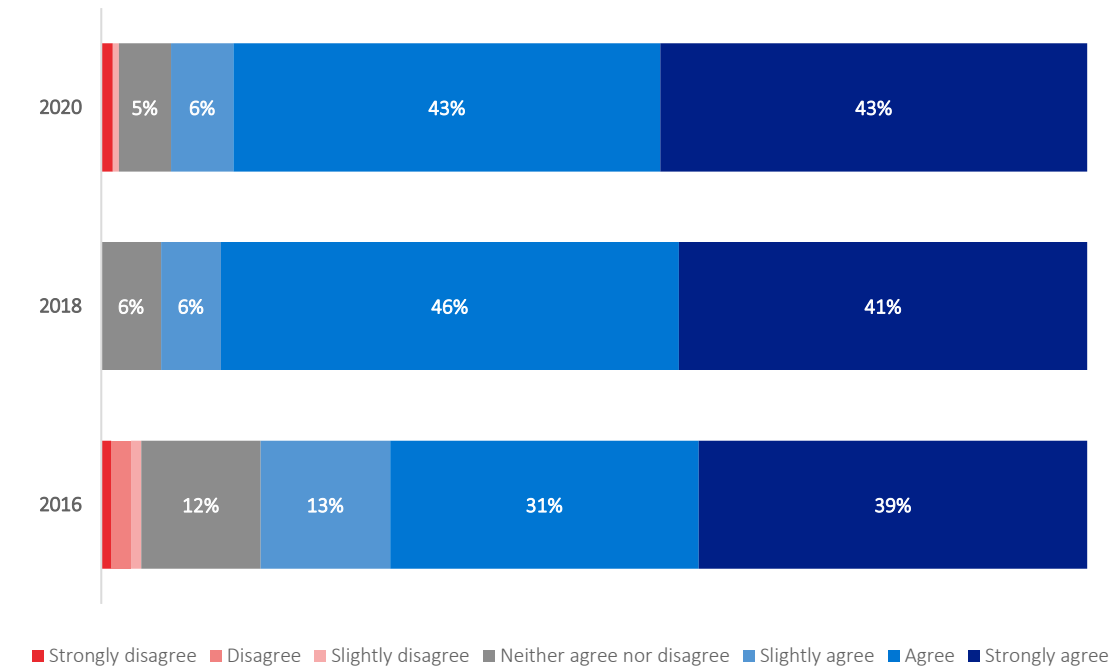
Thinking about your membership of APNIC, how much do you AGREE that APNIC is sufficiently transparent in its activities?

(Members only. 2016 n=733; 2018 n=903, 2020 n=1,118)



Thinking about your membership of APNIC, how much do you AGREE that APNIC is respected in the Internet community?

(Members only. 2016 n=733; 2018 n=903, 2020 n = 1,118)





Endorsement

As well as understanding satisfaction with APNIC services and Membership, the Survey asked respondents to indicate how they speak about APNIC to others.

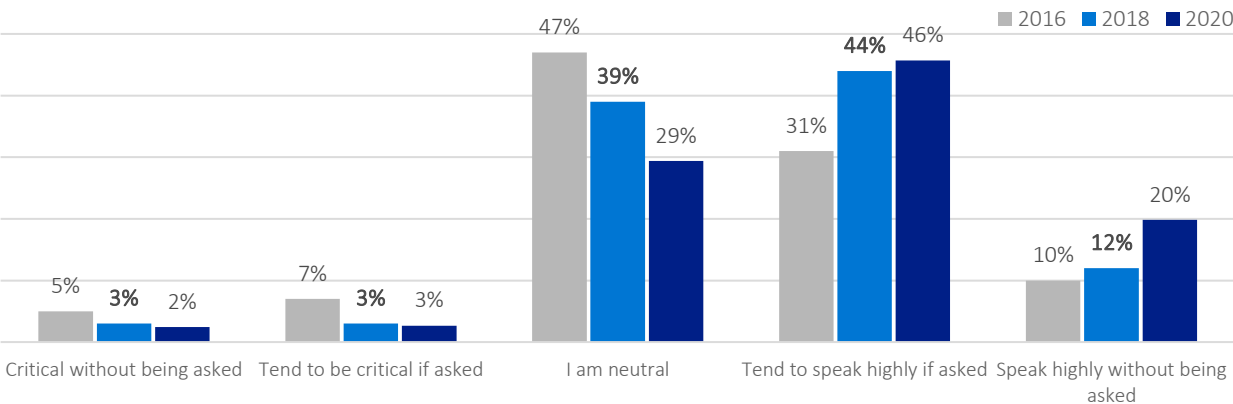
Reflecting interview feedback, APNIC is held in high esteem amongst participants. Positively, two thirds 66% of respondents speak highly of APNIC, 20% speak highly of APNIC without being asked and 46% tend to speak highly if they are asked. This is up significantly from 12% and 44% respectively in 2018. Fewer respondents (29% compared to 39%) indicate that are neutral about APNIC, with many respondents who were previously ambivalent now indicating that they speak positively about APNIC. Very few speak negatively of the organisation.

APNIC Members are more likely to provide favourable endorsement of APNIC than Members of NIRs or other Stakeholders, with 68% and 60% speaking highly of APNIC respectively. Positive endorsement by Members has increased from 60% in 2018.

As in 2018, respondents from Oceania and South Asia are the most likely to provide positive word of mouth, with 69% indicating they speak highly of APNIC – approximately a quarter without being asked. Six in 10 (60%) respondents from East and South East Asia also speak highly of APNIC, with respondents from these regions more likely to be neutral in their communications about APNIC.

Which of these phrases best describes the way you speak about APNIC to others?

(All respondents: 2016: n=1,167; 2018: n=1,241; 2020=1,624)



	Members	Stakeholders	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample Size	1122	502	255	296	439	562	476	1148
Critical without being asked	3%	2%	2%	1%	3%	3%	3%	2%
Tend to be critical if asked	3%	3%	2%	1%	4%	2%	3%	3%
I am neutral	27%	35%	35%	28%	33%	25%	25%	31%
Tend to speak highly if asked	49%	39%	45%	45%	46%	46%	47%	45%
Speak highly without being asked	19%	21%	16%	24%	14%	23%	22%	19%
Mean Score	3.8	3.7	3.7	3.9	3.6	3.8	3.8	3.8
Standard Deviation	0.9	0.9	0.8	0.8	0.9	0.9	0.9	0.9

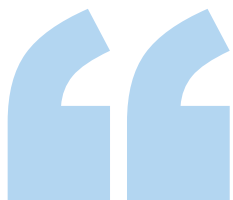
Note: Segments exclude respondents from non-APNIC regions included in the 'Total'
'Other' segment includes developed and developing economies

Segment mean significantly higher / lower than total mean score

Challenges

To test feedback from interviews and understand how APNIC can best support the Internet community, the Survey included a section about the strategic and operational challenges respondents face in providing Internet related products and services.

More detailed information about the challenges organisations face in relation to managing network security and scarcity of IPv4 addresses, as well as how respondents believe APNIC can help in these areas, was also canvassed by the Survey.



What is the main challenge for you / your organisation in providing Internet-related products, services & activities?

To provide an understanding of the issues faced by Members and other Stakeholders in the Internet community, the Survey first asked respondents to identify, in their own words, the main challenge for them or their organisation in providing Internet-related products, services and activities. Feedback was elicited in verbatim form, without prompting, to provide a sense of the “top of mind” issues facing the community.

Many issues were raised by respondents, with challenges cited including the cost of managing and providing Internet services, network and cyber security threats, ageing or underdeveloped infrastructure, poor bandwidth and unreliable Internet connectivity and a lack of access to resources with the necessary technical skills and knowledge to deliver services. As in previous years, many respondents also identified the challenge arising from the shortage of IPv4 address space and the associated issues surrounding implementation and transition to IPv6.



“The internet cost in the Pacific Island countries is still very high and this is a major challenge in the Pacific.” (Oceania)

“Security is major challenge, nowadays. APNIC should focus on this aspect for their members in terms of training, knowledge sharing & best practices.” (South Asia)

“Main challenge is as a developing country Sri Lanka does not have sufficient telecommunications infrastructure specially in rural areas.” (South Asia)

“Increasing human resources who are ready to keep up with updates on IT technology developments, especially related to updated regulations, policies and the latest IT knowledge.” (South East Asia)

What are the main challenges for your organisation in providing internet related products, services & activities?

Financial, budget, cost of managing network operations

"Costing is main challenge when it come to internet related products." South Asia

"High cost of internet connectivity and high cost of cyber security appliances." South Asia

"Limitations of cost, skills and knowledge." South East Asia*

"The internet cost in the Pacific Island countries is still very high and this is a major challenge in the Pacific." Oceania

"Source of funds." South East Asia*

Infrastructure, access and capacity

"Very expensive and slow sometime unreliable and unstable connection." Oceania

"The main challenge is the internet infrastructure here in Samoa. The internet is not reliable and fast at times despite the costs but for me, we need a stable and secure internet for our online products and services." Oceania

"Slow internet connection of the ISP." South East Asia

"Poor connectivity." South Asia

"Aging infrastructure, poor connectivity issues, slow and unreliable internet access." Oceania

Security

"Network security from cyber crime that is currently growing rapidly." East Asia*

"Cybersecurity, Denial of any Service." South East Asia

"Information security issues are becoming more serious, simple, unimplemented systems are vulnerable to hacker attacks." South East Asia*

"Our main challenge is to prevent the data of our organization from internal or external (Internet) attacking." South East Asia

"Security issues is the main challenge." South East Asia

Lack of technical knowledge and skills

"Technical skills and understanding of the different technologies available." Oceania

"Limited staff with administrative skills for Internet-related management." Oceania

"Lack of knowledge regarding IT infrastructure." South Asia

"Challenges in technology, our engineers' access to technology are still inadequate, so we have not kept up with continuous innovation in the world." South East Asia*

Availability of IPv4

"IPv4 address allocation." South Asia

"IPv4 exhaustion has become a great challenge. Customer reluctant to go for IPv6." South Asia

"Lack of IPv4 addresses, despite some organizations have plenty unused addresses." Oceania

"IPv4 Resources and migration from IPv4 to IPv6 are current challenges for us." South Asia

"Insufficient IPv4 address resources, and insufficient application support during the transition to IPv6." East Asia *

*Translated



Strategic challenges

To understand how APNIC can best support the Internet community, a section was included in the Survey about the challenges organisations face in providing Internet-related services. Expanding on the results of prior Surveys, the question was changed to separately test the strategic and operational challenges that community members face. The first question asked respondents holding executive positions to identify the strategic challenges facing their organisation, and to rank at least three in order of priority, from a list of nine items.

From a strategic perspective, four main issues rank as the top challenges for two thirds of organisations. Cost control of hardware, software and network investment, compliance with regulatory requirements, hiring and keeping skilled staff and security risks were identified as the main challenge by approximately one in six respondents each.

Cost Control

At 17%, cost control of hardware, software and network investments is the main challenge for the largest proportion of organisations. Further, nearly half (48%) of respondents ranked cost control within the top three challenges for their organisation. It was also the most often mentioned challenge identified in free text feedback, with respondents citing “high cost of internet connectivity and high cost of cyber security appliances”, as well as “lack of funding for new equipment”. Respondents from East Asia were the least likely to identify cost control within their top three challenges, at 10% and 34% for the top rated and either first, second or third ranked issue, respectively.

Regulatory Compliance

Compliance with regulatory requirements is the main strategic challenges facing 16% of organisations in the Internet community. A third (34%) indicate that compliance is one of the top three issues for their organisation.

Few respondents in East Asia rank regulatory compliance as an issue for their organisation, at 3% (number one issue) and 17% (top three challenges). While compliance is also less likely to be the main challenge for those in Oceania (9%), it is the main issue for nearly one in five respondents in South Asia (22%) and South East Asia (20%).

Security Risks

Security risks were the next most selected challenge, identified as the main strategic challenge for their organisation by 15% of respondents. Top three rankings indicate that security risks (48%) are a challenge for half of organisations who participated in the Survey, with many also mentioning security as their main challenge in free text comments.

Security appears to be of particular concern to respondents in Oceania. A quarter (25%) of executive respondents in Oceania rank it as the top challenge facing their organisation, while 63% include it amongst the top three strategic issues their business confronts. No organisations in East Asia report that security is the main issue facing their organisation – although 45% include it as either the second or third biggest challenge.

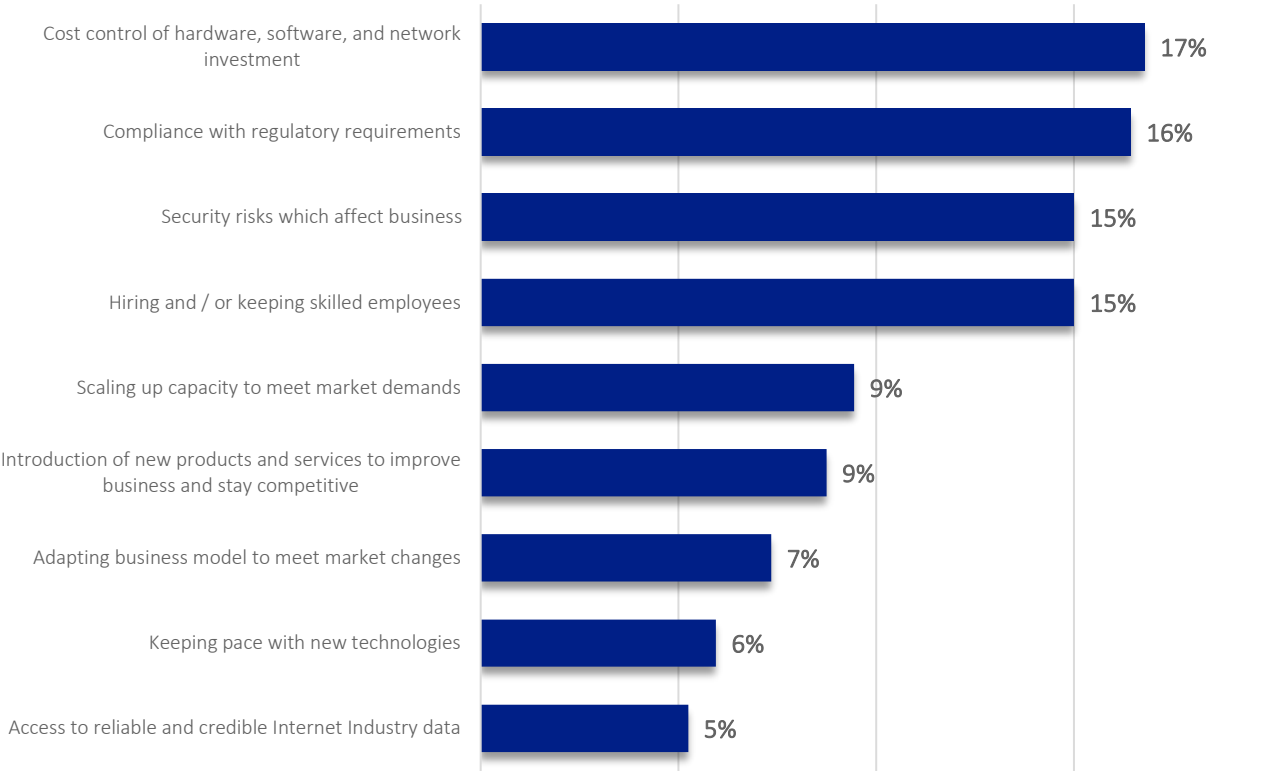
Workforce

Maintaining an adequately skilled workforce is also a concern for 15% of respondents across the region, particularly in East Asia where 24% of respondents suggest it is the main challenge for their organisation. Hiring and keeping skilled staff is the main strategic issue for 18% of organisations in Oceania, 13% in South East Asia and 11% in South Asia.

Staffing challenges were also commonly mentioned amongst free text feedback, with many comments referencing difficulties with “finding adequately trained staff in our region”, “technical resource availability” and “lack of knowledge and skills”.

Thinking about your Internet-related services, products or activities, what are the MAIN STRATEGIC challenges facing your organisation?

(Ranking Question. Respondents holding executive roles asked to rank at least top 3 items, n=286) (% Ranked 1)



	Member	Stakeholder	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	230	56	29	68	64	118	85	201
Cost control of hardware, software, and network investment	18%	13%	10%	19%	19%	17%	19%	16%
Compliance with regulatory requirements	15%	23%	3%	9%	20%	22%	19%	15%
Hiring and / or keeping skilled employees	16%	13%	24%	18%	13%	11%	11%	17%
Security risks which affect business	14%	16%	0%	25%	6%	17%	16%	14%
Scaling up capacity to meet market demands	10%	5%	14%	9%	11%	8%	7%	10%
Introduction of new products and services to improve business and stay competitive	10%	5%	14%	9%	14%	5%	7%	9%
Adapting business model to meet market changes	7%	11%	21%	9%	5%	4%	4%	9%
Keeping pace with new technologies	6%	5%	7%	1%	5%	9%	11%	4%
Access to reliable and credible Internet Industry data	4%	9%	7%	1%	8%	6%	7%	4%

Note: Segments exclude respondents from non-APNIC regions included in the 'Total' 'Other' segment includes developed and developing economies

Significance tests not performed on ranking questions



Operational challenges

The next question was designed to test the operational challenges organisations face in providing Internet-related services. The question asked respondents to identify the challenges facing their organisation, and to rank at least three in order of priority, from a list of ten items.

Overall, the top three operational challenges facing organisations providing internet related services remain the same as in prior years. Network security (23%), the cost of operations (18%) and scarcity of IPv4 (13%) received broadly consistent rankings as in 2018. While regional differences were apparent in the challenges identified by respondents, there were few differences based on economic development or membership status.

Network Security

Despite less prominence in interview discussions than in prior years, network security remains the issue identified as the main operational challenge by the highest proportion of respondents in the 2020 Survey. Nearly a quarter (23%) of respondents indicated that handling security incidents is the main operational challenge facing their organisation, while 47% of respondents rated it as one of their top three operational challenges. Many free text comments indicated that “security issues (are) the main challenge”, with suggestions that “cyber crime is currently growing rapidly” and that “information security issues are becoming more serious”. Others mentioned that “cyber security (is) growing in size and sophistication” and there is a need for “mitigations against abuses”.

Handling security threats is a challenge for organisations in all regions, with at least one in five respondents in East Asia (26%), South Asia (25%) South East Asia (21%) and Oceania (20%) ranking it the number one operational issue they face.

Cost Management

Reflecting strategic priorities, managing the cost of systems, network operations and security is the main operational challenge for 18% of respondents. When those who ranked it either one, two or three is considered, 42% of respondents indicated that systems and network operation costs are a challenge for their organisation. Managing costs is a specific concern for respondents in Oceania, with 26% ranking it their number one operational challenge.

IPv4 Shortage

While interviews suggest that the relative importance of IPv4 scarcity is falling, scarcity of IPv4 addresses remains a challenge for respondents. Reflecting prior surveys, 13% of respondents indicated it was the number one operational challenge facing their organisation. Coping with IPv4 shortages is less of a concern amongst respondents in Oceania, only 8% of whom reported it was the number one operational issue facing their organisation. This compares to 19% in East Asia, 14% in South Asia and 12% in South East Asia.

In signs that other issues are taking precedence, however, only 25% of respondents rated the scarcity of IPv4 amongst their top three challenges – lower than all but one of the other listed issues. It was also identified as the main challenge by only 8% of respondents providing free text feedback about the main challenge facing their organisation.

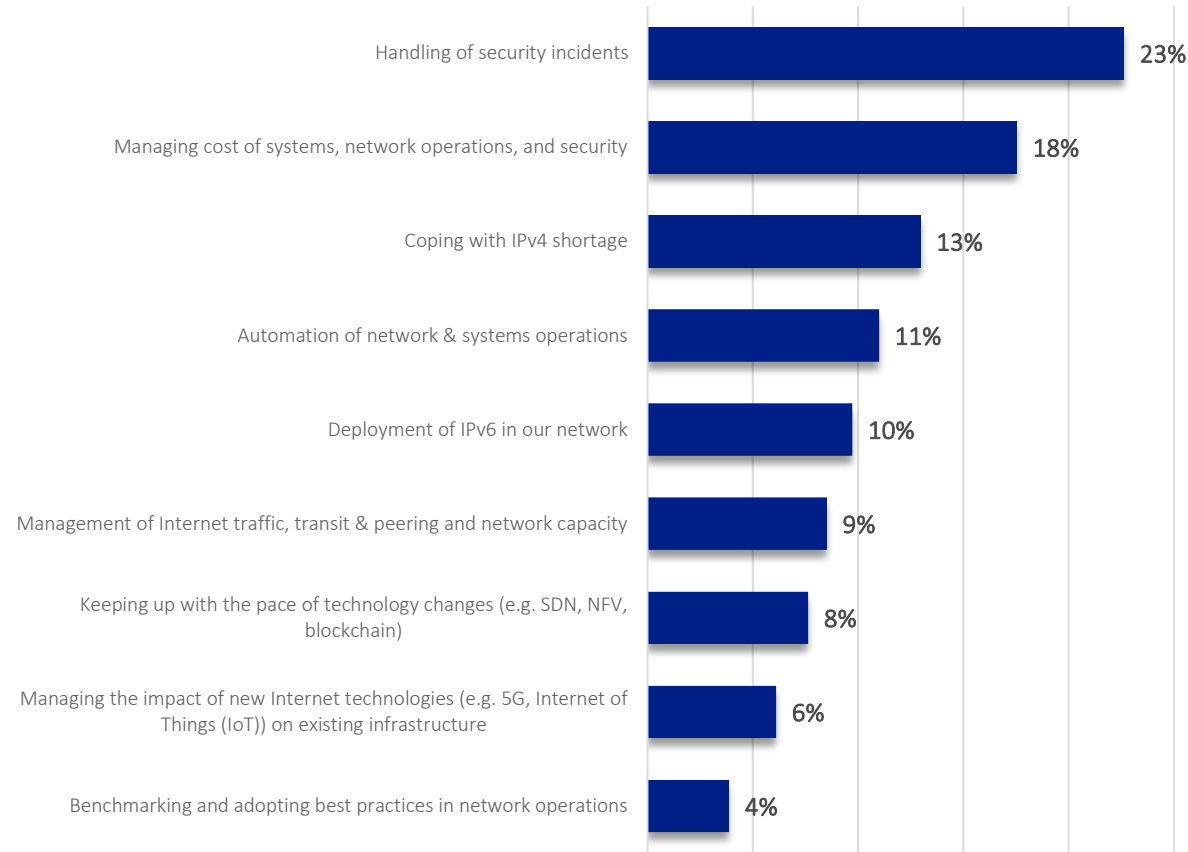
Automation of Network Systems & Operations

A new challenge added to the list in 2020, automation of network systems and operations, was identified as the main operational challenge facing their organisation by 11% of respondents. It was also included amongst the top three challenges of 42% of respondents.

Respondents in Oceania were particularly likely to identify automation as a challenge for their organisation, with 49% including it within their main three operational challenges. This compares to only 37% in South East Asia and 39% in East Asia.

Thinking about your Internet-related services, products or activities, what are the MAIN operational challenges facing your organisation?

(Ranking Question. All Respondents asked to rank at least top 3 items, n=1,624)



	Member	Stakeholder	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	1087	486	252	295	425	531	444	1129
Handling of security incidents	21%	25%	26%	20%	21%	25%	27%	21%
Managing cost of systems, network operations, and security	17%	19%	15%	26%	20%	13%	14%	19%
Coping with IPv4 shortage	16%	7%	19%	8%	12%	14%	12%	13%
Automation of network & systems operations	11%	10%	6%	12%	11%	11%	11%	11%
Deployment of IPv6 in our network	9%	10%	8%	6%	10%	12%	12%	9%
Management of Internet traffic, transit & peering and network capacity	9%	7%	8%	9%	8%	9%	9%	8%
Keeping up with the pace of technology changes (e.g. SDN, NFV, blockchain)	7%	10%	11%	6%	8%	7%	7%	8%
Managing the impact of new Internet technologies (e.g. 5G, Internet of Things (IoT)) on existing infrastructure	5%	8%	7%	5%	6%	6%	5%	6%
Benchmarking and adopting best practices in network operations	4%	4%	2%	7%	5%	2%	2%	4%

Note: Segments exclude respondents from non-APNIC regions included in the 'Total'
'Other' segment includes developed and developing economies

Significance tests not performed on ranking questions



“APNIC is doing fantastic job by organizing technical trainings and workshops on latest technologies and they should organize more so people can more benefit.”

South Asia

How might APNIC best assist you or others with these challenges?

Overwhelmingly, respondents believe APNIC can best support the Internet community to overcome the challenges it faces through the provision of education and training.

There were many calls for APNIC to provide more training, both online and in person. Respondents suggested training on many different topics, such as network security, IPv6 implementation, network automation, global trends and new technologies.

Also suggested was that APNIC arrange training provided by experts, local training, practical hand-on training and workshops, more in-depth training and training focussed on the needs of small organisations and less developed economies.

Demand for case studies and best practice information sharing was also common.



“Providing capacity building and other assistive training at a very low cost or no cost for the organizations that struggle to adapt in rapidly changing environments of technologies”.
(East Asia)

“Provide more face to face training opportunities for the Pacific Island Countries” (Oceania)

“Provide more training and inform best practices in the implementation of new technologies.” (South East Asia)

“Provide more resources for network operators and smaller organization who need to respond to security incidents” (East Asia)

How might APNIC best assist you or others with these challenges?

Education and Training

"More number of training sessions on new technologies will be great help." South Asia

"More local or online training, for basic and advanced users." Oceania

"If APNIC can give more training sections to developing countries." South East Asia

"Everything that has been deployed by APNIC, from workshops to APNIC Academy is a great help in everyday work, maybe more advanced topics, to go deeper in the subject." Oceania

"Conducting online/in-person workshops with experts." South Asia

"By providing technical training online in key areas of Internet technologies." South Asia

"Webinars and online workshops." South Asia

"Regular training is given, especially combining practical training and organizing members to exchange experience." East Asia (Translated)

"Workshop, Conference, Community meetup." East Asia*

"Provide more training and inform best practices in the implementation of new technologies." South East Asia*

"More workshops or conferences." South East Asia

Information and Resources

"Providing guidance, whitepapers and courses." Oceania

"Provide more comprehensive documentation of standards and suggestions." South East Asia

"By providing relevant information and best practical way to maintain the sustainability and the security of the network." Oceania

"APNIC may provide updates about the technological developments, security risks etc. through newsletters and social media channels." South Asia

"Providing access to more open resources and knowledge forum." South East Asia*

"Provide the latest industry trends and organize platform exchanges." East Asia*

"Disseminate information about Internet security to a wide range of users and end users." East Asia*

Case Studies and Collaboration

"Sharing best practices and some new industry trends will be beneficial for all." Oceania

"Provide best practices and solution sharing among members." South East Asia

"Collaboration for enhancing the knowledge base among the budding and experienced Engineers further." South Asia

"Establish a forum to exchange discussions regularly." South East Asia*

Regional and Local Language Support

"We need more Pacific focused events through the support of APNIC." Oceania

"More training in different languages, especially in Chinese." East Asia*

"APNIC should support multiple languages, providing more in-depth training in these areas." South East Asia*

*Translated



Network Security

To provide a deeper understanding of the network security issues facing the community, the Survey next asked respondents to select the main network security challenges facing their organisation, from a list of 13. Respondents were able to select up to three challenges.

While results are not directly comparable due to slight changes to the question structure and options, as in 2018, DDoS attacks, phishing, spam, malware, ransomware are the top two security threats identified by respondents.

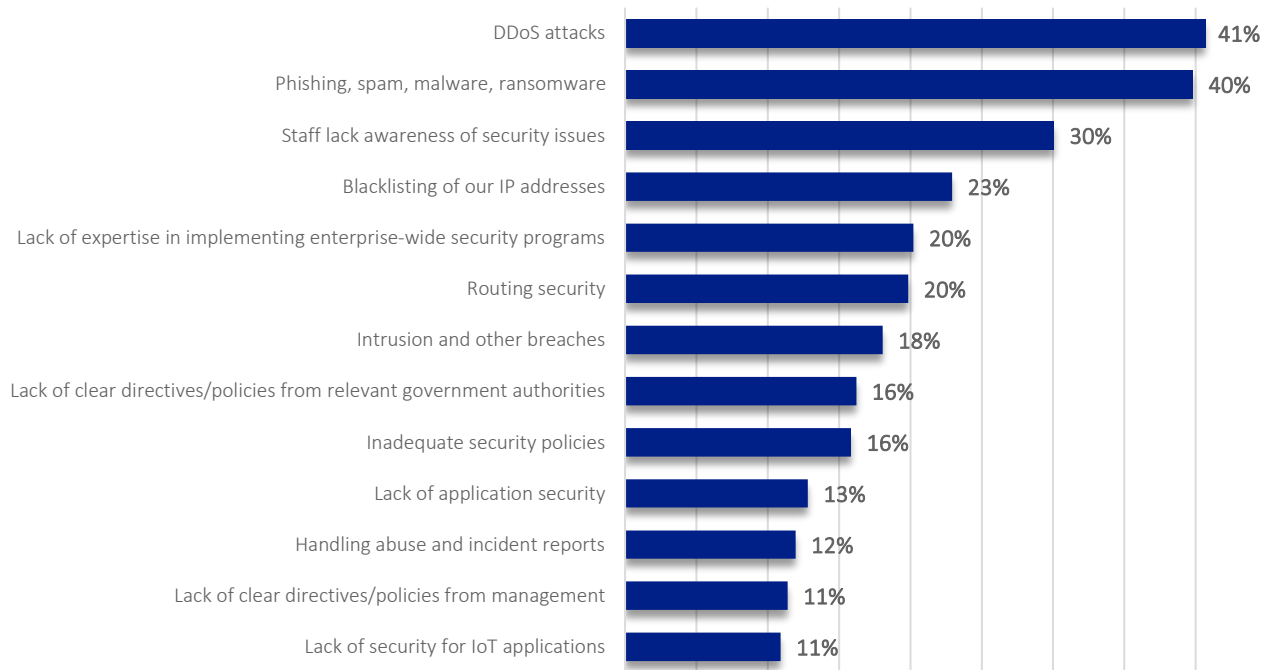
DDoS attacks were included as one of the main network security issues for 41% of respondents. This rises to 51% of respondents in East Asia and 46% in South Asia, significantly higher than respondents in Oceania (24%). DDoS attacks appear to be a bigger issue amongst organisations in LDEs (48%).

Two in five (40%) respondents indicated that phishing, spam, malware and ransomware are problematic for their organisation. Respondents in Oceania (49%) were more likely than those in other regions to identify these as issues for their organisation.

Reflecting feedback provided by some interview participants, lack of awareness of security issues amongst staff is also a challenge for organisations in trying to manage network security. Three in ten (30%) suggested that limited knowledge amongst employees and those working in the Internet community is one of the main challenges facing their organisation in relation to network security. Mentioned largely by those in smaller and least developed economies in interview discussions, lack of staff expertise was significantly more likely to be identified as an issue by respondents in Oceania (40%) than other regions.

Also mentioned in interviews, blacklisting of IP addresses was identified as a challenge. This was confirmed by the Survey with 23% of respondents, particularly those in LDE's with 28% rating it amongst their main challenges. Those in South Asia were the most likely (31%) to rate it as a challenge.

Thinking about network security, what are the MAIN challenges facing your organisation?
(All Respondents. Select up to 3. Base n=1,624, total mentions = 4,420)



Thinking about your network challenges, what are the MAIN challenges facing your organisation?

(All Respondents. Select up to 3. Base n=1,624, total mentions = 4,420)

	Members	Stakeholders	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	1120	503	255	296	439	562	476	1147
DDoS attacks	44%	32%	51%	24%	40%	46%	48%	38%
Phishing, spam, malware, ransomware	41%	36%	37%	49%	35%	40%	38%	40%
Staff lack awareness of security issues	27%	36%	27%	40%	29%	28%	29%	31%
Blacklisting of our IP addresses	26%	15%	16%	16%	22%	31%	28%	21%
Lack of expertise in implementing enterprise-wide security programs	19%	24%	16%	21%	25%	19%	19%	21%
Routing security	21%	18%	20%	16%	21%	20%	23%	19%
Intrusion and other breaches	19%	16%	31%	22%	16%	11%	11%	21%
Lack of clear directives/policies from government	14%	21%	11%	12%	18%	20%	21%	14%
Inadequate security policies	14%	19%	20%	18%	15%	14%	18%	15%
Lack of application security	13%	13%	8%	15%	14%	12%	12%	13%
Handling abuse and incident reports	11%	14%	12%	12%	14%	11%	11%	13%
Lack of clear directives/policies from management	11%	13%	11%	11%	13%	11%	12%	11%
Lack of security for IoT applications	11%	11%	7%	11%	10%	12%	11%	11%

Note: Segments exclude respondents from non-APNIC regions included in the 'Total'
'Other' segment includes developed and developing economies

Significantly **higher** / **lower** than total

Consistent with 2018, training is the most common way both Members and other Stakeholders believe APNIC can assist the community with the challenges posed by network security threats. Overall, 49% of respondents believe APNIC can best help the community by running specific security training courses, on topics such as DDoS prevention and security policy development. Many respondents suggested that APNIC should “provide more trainings and webinars” and could assist “through trainings/workshops, technical exchange and advice”.

Calls for APNIC training is highest in South Asia and South East Asia, at 55% and 50% of respondents, respectively. Respondents in LDEs (58%) were also significantly more likely to indicate APNIC could best help them with network security challenges by offering security focused training.

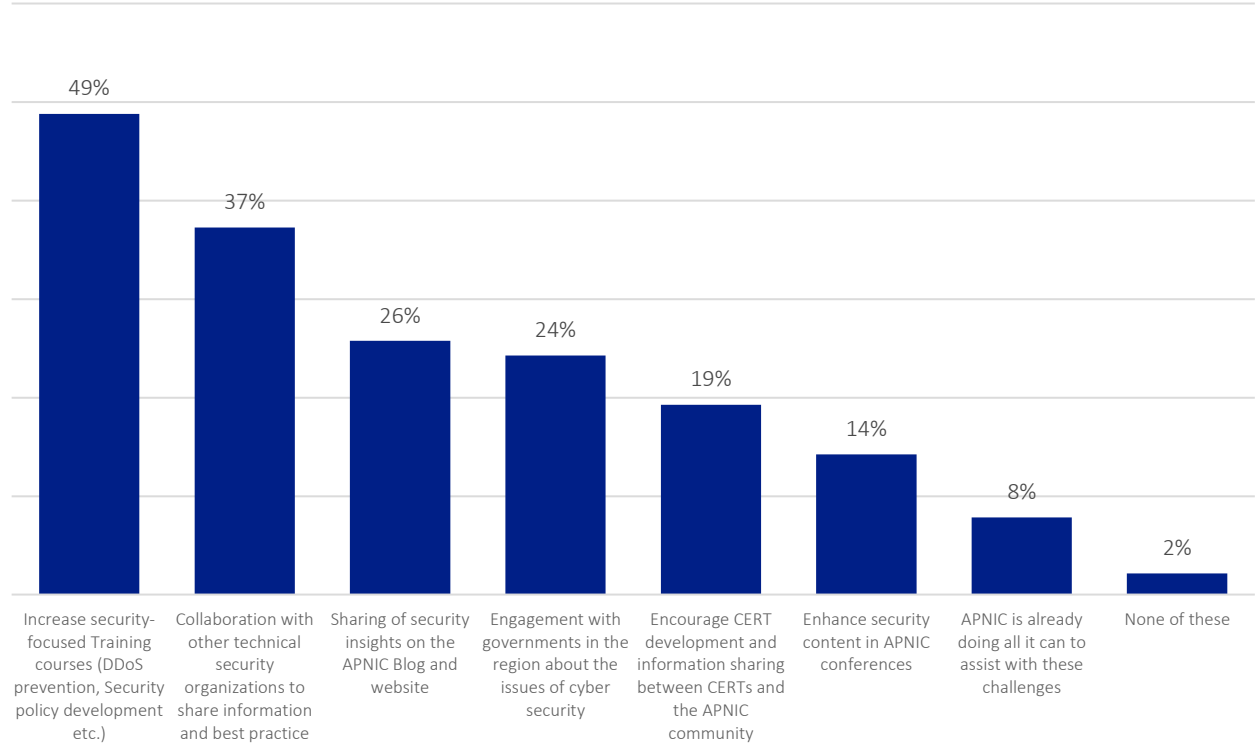
Over a third (37%) of respondents believe that APNIC can also help them with security related challenges by collaborating with other technical security organisations to share information and best practice. This was reflected in free text feedback, with respondents suggesting that APNIC is “in a position ease this burden through trainings and collaboration to bring providers in the region to share best practices in the area of technology adoption”.

Approximately a quarter (26%) of respondents also believe that APNIC should raise awareness and share security insights with the community on the APNIC Blog and website. Respondents in South East Asia (30%) were most likely to support this proposal. Comments provided by respondents suggested that the “APNIC blog publish in-depth articles on the matter (including) deep technical articles with advanced features deployment guides”. Others simply asked for APNIC to “keep doing what you are doing with training, conferences and the blog”.

A similar proportion (24%), particularly those in South Asia (30%) and LDEs (31%), indicated that engagement with government would also help, with verbatim survey comments suggesting that APNIC could “coordinate with key-government stake-holders in the country to run more workshops and awareness” and that it would be beneficial to run “education activities for governments and those who make policies and regulations”.

How might APNIC best assist you or others with network security challenges?

(All Respondents. Select up to 2. Base n=1,624: Total mentions: 2,915)



“APNIC should add in-depth courses on information security as well as related documents, future information security trends.”

South East Asia*

How might APNIC best assist you or others with network security challenges?

(All Respondents. Select up to 2. Base n=1,624: Total mentions: 2,915)

	Members	Stakeholders	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	1120	503	255	296	439	562	476	1147
Increase security-focused Training courses (DDoS prevention, Security policy development etc.)	51%	44%	48%	40%	50%	55%	58%	45%
Collaboration with other technical security organizations to share information and best practice	39%	34%	42%	40%	37%	34%	36%	38%
Sharing of security insights on the APNIC Blog and website	27%	24%	23%	26%	30%	24%	21%	28%
Engagement with governments in the region about the issues of cyber security	22%	29%	25%	19%	21%	30%	31%	21%
Encourage CERT development and information sharing between CERTs and the APNIC community	17%	24%	23%	22%	20%	18%	17%	20%
Enhance security content in APNIC conferences	13%	16%	15%	11%	15%	14%	14%	14%
APNIC is already doing all it can to assist with these challenges	8%	7%	4%	11%	6%	7%	6%	9%
None of these	2%	2%	2%	4%	1%	1%	1%	3%

Note: Segments exclude respondents from non-APNIC regions included in the 'Total' 'Other' segment includes developed and developing economies

*Translated

Significantly higher / lower than total



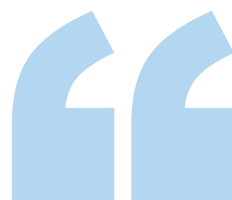
Do you have any other ideas about how APNIC can help the region deal with network security challenges?

“APNIC is already doing more. Increasing APNIC membership in the Region will surely see more Security related information being disseminated to the members via different platforms already in use.” (Oceania)

“By fostering and supporting security talks and meetups in the APNIC region.” (Oceania)

“Focus on Government and Regulatory body engagement on this developments.. Their engagement is really important.” (South Asia)

“Guide network operators newest technology to safeguard networks.” (South East Asia)



“Sharing industry best practices and provide training.” (South Asia, Translated)

“APNIC can arrange free short session with members regarding security issues occurring regularly and to give proper guidelines for preventing this.” (South Asia)

“APNIC can organize the community base training.” (South Asia)

“Training on security fundamental and practical case studies from leading service providers and what do they seen often in production deployment.” (South East Asia)

Do you have any other ideas about how APNIC can help with network security issues in the region?

Training

"Provide training and conferences on network security." South East Asia*

"APNIC sharing their knowledge how to maintain security in a workshop". South Asia

"By arranging tech talks and webinars by the network security professionals." South Asia

"Partner with local CERT to lead on national development of guidelines and technical internal policies. Partner with local organisation to run hands on practical training." Oceania

"I think best is for APNIC to provide more updates network security training as well as hand on labs." Oceania

"Provide more training with certificates on the latest security threats and how users can handle them." South Asia

Information sharing, case studies,

"Dissemination of the latest security-related information." South Asia*

"APNIC can assist us with network security challenges is a blog post". South Asia

"Enhance sharing of security insights on the APNIC Blog and website." South Asia

"create best practices guides and open source tools." South East Asia

"Providing lessons on how to overcome network security problems that are often encountered, both through the APNIC website blog and through the Seminar program held by the APNIC team." South East Asia*

Collaboration, working with government and business

"Strengthen the network security activities with government departments in the jurisdiction, so as to promote enterprises to improve the level of security management." East Asia*

"Support the understanding of the importance of security technology to policy makers and business owners in each local community." East Asia*

"APNIC can develop more effective tools for mitigating security challenges for NIRs of Asia Pacific region and showcase or train NIRs with their existing security tools." South Asia

"Close cooperation with related organizations and information transmission." East Asia*

"Provide better collaboration among members." South East Asia

Encourage RPKI, BGP and other tools

"Encourage uptake of RPKI for BGP or other technologies to similarly secure routing paths." Oceania

"Developing RPKI within our region; coordinating with all NIRs to promote RPKI, coordinating with big ISPs/IXPs in the world to deploy RPKI within their networks." South East Asia*

"Push harder to have members adopt BCP routing security practices, too many networks are behaving poorly and causing other network providers to bridge the gap and protect against bad traffic." Oceania

Already doing a great job!

"APNIC is on the way of helping organization from the network security incidents. But still need to apply the action." South East Asia

"APNIC is already doing the best assistance." South East Asia

*Translated



IPv4 Scarcity

As in 2018, the Survey canvassed information about the challenges arising from the continued scarcity of IPv4 addresses. From a list of seven potential challenges, respondents were asked to indicate up to two challenges facing their organisation.

Similar to 2018, and reflecting the findings from the qualitative interviews, the two biggest issues facing respondents are deployment of IPv6 (34%) and the cost of IPv4 addresses (27%). Although not significant, deployment of IPv6 (28%) and the cost of buying IPv4 addresses (20%) is less of an issue for Members in Oceania than other regions.

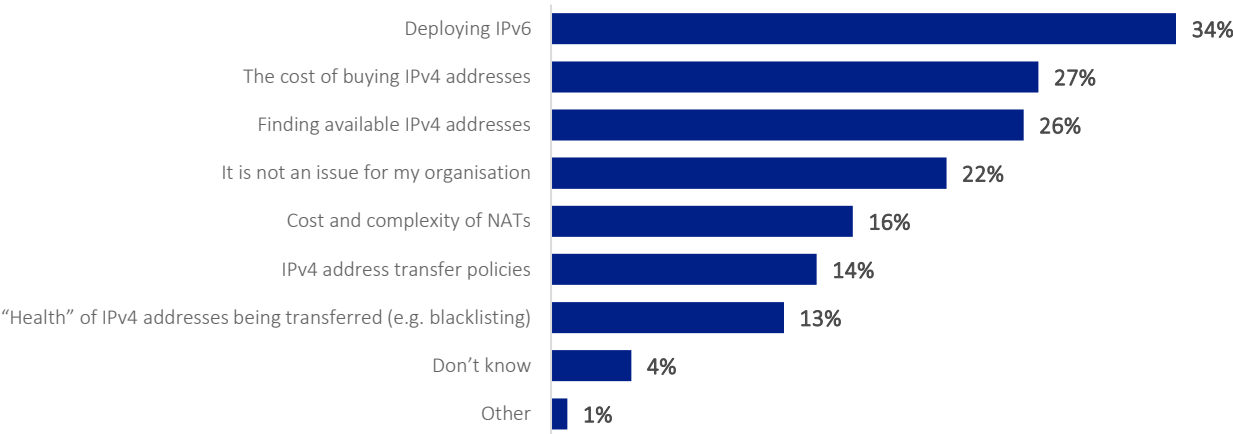
Finding available IPv4 addresses is also an issue for just over a quarter (26%) of respondents. Again, Members in Oceania (15%) are significantly less likely to indicate that finding IPv4 addresses poses a challenge for them.

Whilst cost and complexity of NATs was the third biggest challenge for Members in 2018, this year it is not as prominent. This also reflects the feedback in the qualitative interviews, where challenges with using NATs was rarely mentioned.

Similar to 2018, 22% of Members indicate that scarcity of IPv4 is not an issue for their organisation. Members from Oceania (37%) were significantly more likely to report that this is not an issue for them than those in other regions.

Thinking about the scarcity of IPv4 addresses, what are the MAIN challenges facing your organisation?

(Members only.: Select up to 2. Base n=1,119 Total mentions: 1,754)



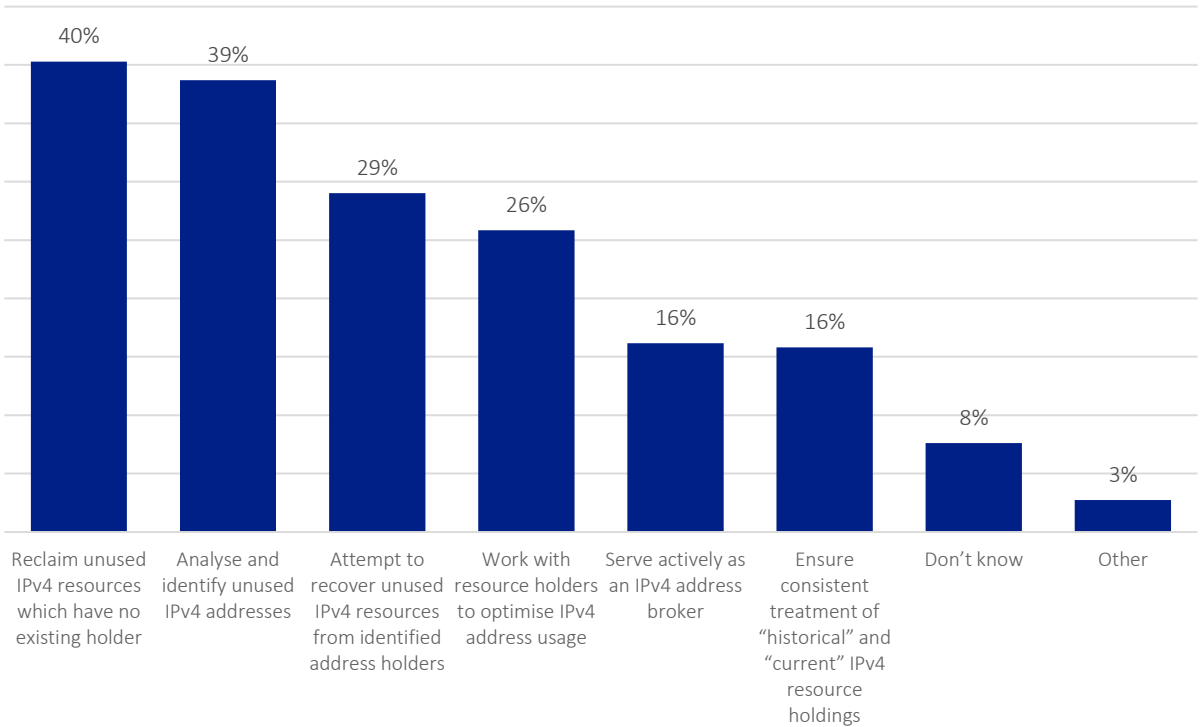
	East Asia	Oceania	SE Asia	South Asia	LDEs	Others
Sample size	165	217	296	397	353	766
Deploying IPv6	36%	28%	38%	36%	34%	34%
The cost of buying IPv4 addresses	24%	20%	30%	30%	29%	25%
Finding available IPv4 addresses	28%	15%	26%	30%	26%	25%
It is not an issue for my organisation	16%	37%	19%	17%	18%	23%
Cost and complexity of NATs	16%	16%	17%	17%	18%	16%
IPv4 address transfer policies	21%	9%	14%	14%	16%	14%
"Health" of IPv4 addresses being transferred	12%	10%	11%	15%	14%	12%
Don't know	2%	5%	4%	5%	5%	4%
Other	2%	0%	1%	1%	0%	1%

Note: Segments exclude respondents from non-APNIC regions included in the 'Total'
'Other' segment includes developed and developing economies

Significantly higher / lower than total

Thinking about the scarcity of IPv4 addresses, which, if any, of the following IPv4 activities do you think APNIC should undertake?

(Members only. Select up to 2. Base n=1,119, Total mentions: 1,548)



Respondents were next asked to indicate what activities APNIC should undertake to assist with the scarcity of IPv4 addresses.

Reclaiming unused IPv4 resources which have no existing holder was supported by 40% of respondents. Nearly two in five (39%) also want APNIC to analyse and identify unused IPv4 addresses, presumably to enable the reclamation of these.

Twenty-nine percent (29%) want APNIC to attempt to recover unused address space from identified address holders, and over a quarter (26%) believe that working with address holders to optimise IPv4 address usage would assist to combat the scarcity of IPv4.

There was less support for APNIC to serve actively as an IPv4 broker or to ensure the consistent treatment of historical and current resource holdings (both 16%).

In the individual interviews conducted prior to this Survey, Members were more likely to indicate they wanted APNIC to continue the encouragement and promotion of deployment of IPv6 in response to IPv4 scarcity. There were calls for APNIC to enter into dialogue with vendors, government and regulatory authorities to educate and inform them of the benefits of IPv6. This was supported by the majority of the 'Other' suggestions, with comments that APNIC could 'socialize the use of IPv6' and 'promote IPv6 with greater emphasis on the benefits'.

Thinking about the scarcity of IPv4 addresses, which, if any, of the following IPv4 activities do you think APNIC should undertake?

(Members only. Select up to 2. Base N=1,119, Total mentions: 1,548)

	Total	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	879	139	136	239	330	288	591
Reclaim unused IPv4 resources which have no existing (or contactable) holder	40%	40%	46%	37%	39%	36%	42%
Analyse and identify unused IPv4 addresses	39%	30%	26%	46%	43%	40%	38%
Attempt to recover unused IPv4 resources from identified address holders	29%	26%	25%	26%	35%	36%	26%
Work with resource holders to optimise IPv4 address usage	26%	28%	23%	25%	28%	29%	24%
Serve actively as an IPv4 address broker	16%	25%	21%	14%	13%	11%	18%
Ensure consistent treatment of “historical” and “current” IPv4 resource holdings	16%	17%	17%	18%	14%	16%	16%
Don't know	8%	6%	10%	5%	9%	9%	7%

Note: Segments exclude respondents from non-APNIC regions included in the 'Total'
'Other' segment includes developed and developing economies

Significantly **higher** / **lower** than total

Reclaiming unused IPv4 resources which have no existing holder was supported relatively evenly across all regions and economies. While support to analyse and identify unused addresses was also consistent across economies at different stages of development, from a regional perspective respondents in Oceania (26%) are significantly less likely to indicate they want APNIC to do this.

Three in ten (29%) respondents support APNIC attempting to recover unused IPv4 resources from identified address holders, with those in South Asia (35%) and LDEs (36%) more likely to indicate APNIC should undertake this activity. Respondents in developed or developing economies are significantly less likely to support this initiative.

Members in East Asia are more likely to want APNIC to serve actively as a broker for IPv4 resources, with a quarter (25%) indicating support for this approach.

Technology Adoption

More detailed information about the challenges organisations face in implementing and transitioning to IPv6, as well as how respondents believe APNIC can help with this, was canvassed in the Survey.

This year, the Survey also tested awareness and adoption of Resource Public Key Infrastructure (RPKI), Route Origin Authorisation (ROA) and Route Origin Validation (ROA) amongst members, and what more APNIC can do to assist with implementation of these technologies for routing security.



IPv6 Deployment

Reported full deployment of IPv6 in the region has grown from 15% in 2018 to 20% in 2020. Consistent with 2018, 23% indicate that IPv6 is deployed in their core networks, and 32% have a deployment plan in place. Pleasingly, those who report they have no deployment plan in place has fallen from 35% in 2016 to 25% this year.

Members in East Asia (36%) are more likely to indicate they have fully deployed IPv6, up from only 17% in 2018. In contrast, only 15% of respondents in South Asia report full deployment of IPv6, although this is higher than reported in 2018 when only 8% had fully deployed the technology.

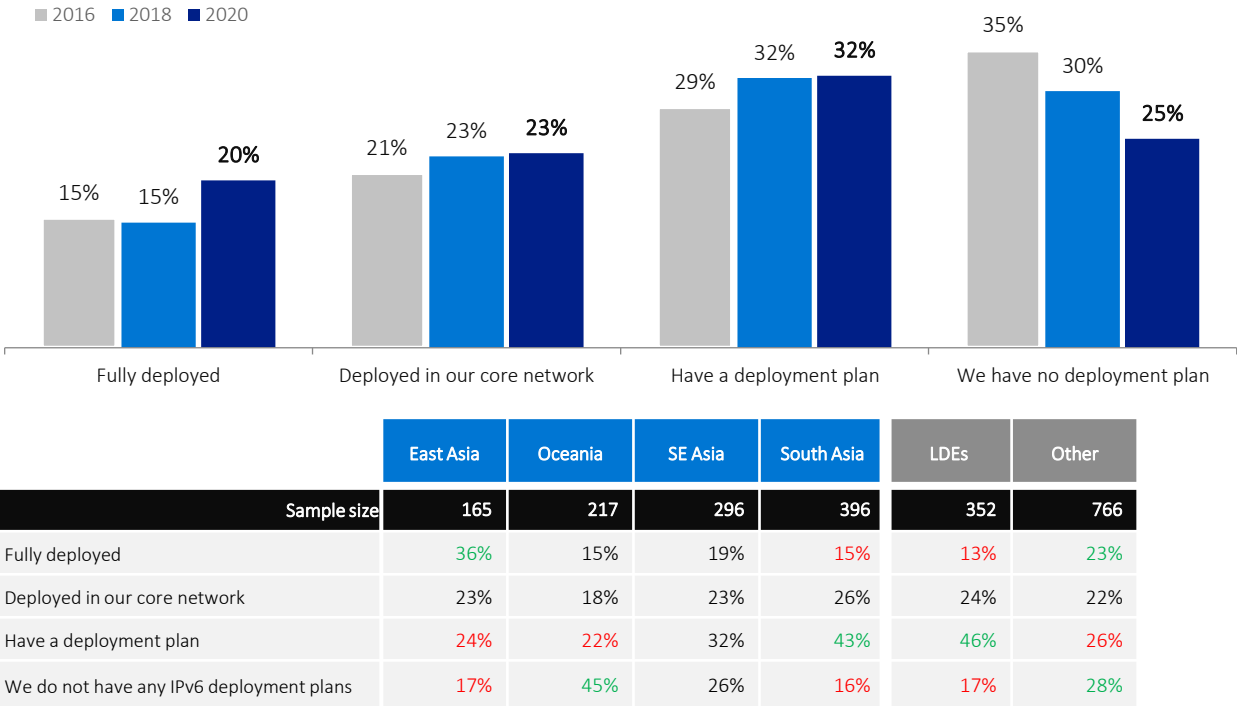
Those in least developed economies also report higher deployment than in 2018, with 13% having fully deployed IPv6 in 2020, compared to only 7% in 2018.

Deployment of IPv6 in core networks is relatively consistent across regions and economies. While many Members interviewed prior to the Survey indicated that whilst deployment in their own networks was complete, slow adoption and a lack of understanding of the benefits of IPv6 amongst others in the Internet community was hampering full deployment.

More respondents in South Asia (43%) and least developed economies (46%) indicate they have an IPv6 deployment plan than other regions and economies.

Members in Oceania (45%) and those from other economies (28%) are the most likely to indicate they have no IPv6 deployment plans in place.

Has your organisation already deployed or are you ready for deployment of IPv6?
(Members only: n= 1,119)

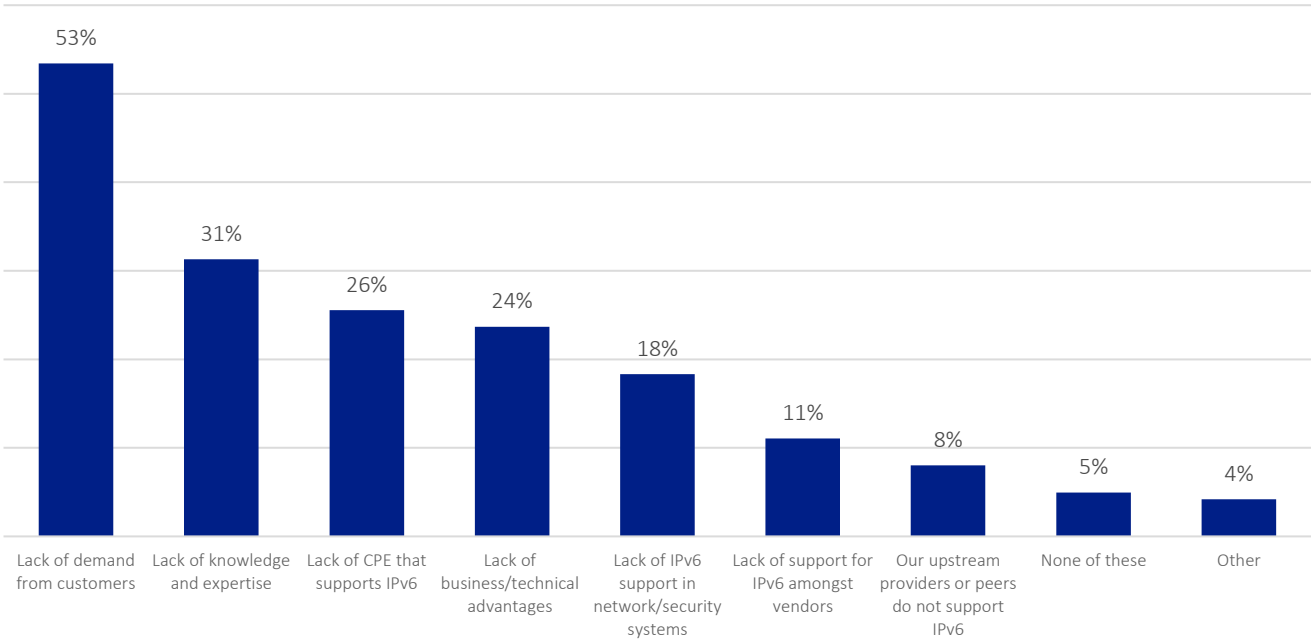


Note: Segments exclude respondents from non-APNIC regions included in the 'Total'
'Other' segment includes developed and developing economies

Significantly higher / lower than total

What is preventing IPv6 deployment in access or other networks?

(Members only. Select up to 2. n=262)



	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	39	40	69	105	88	174
Lack of demand for IPv6 from customers	51%	60%	61%	49%	52%	54%
Lack of knowledge and expertise on IPv6	28%	30%	28%	37%	39%	28%
Lack of CPE (customer equipment) that supports IPv6	21%	20%	26%	30%	34%	21%
Lack of business/technical advantages or reasons to adopt IPv6	31%	38%	25%	14%	15%	28%
Lack of IPv6 support in network management / security systems	23%	15%	7%	24%	25%	15%
Lack of support for IPv6 amongst vendors	10%	18%	6%	12%	11%	11%
Our upstream providers or peers do not support IPv6	5%	5%	12%	8%	5%	10%
None of these	5%	5%	7%	4%	2%	6%

Note: Segments exclude respondents from non-APNIC regions included in the 'Total'
'Other' segment includes developed and developing economies

Significantly higher / lower than total

The Survey next asked those without an IPv6 deployment plan for feedback about the main barriers to IPv6 deployment. Over half (53%) of APNIC Members report that a lack of customer demand is the biggest issue with deployment of the technology.

And while a lack of skills (31%) and customer equipment (26%) round out the top three reasons preventing deployment, nearly a quarter (24%) indicate that there are not enough business or technical advantages to adopt IPv6. Free text comments also support this, with suggestions that “the problem with IPv6, is that cost-to-benefit analysis doesn't add up. It does the same thing as IPv4, but requires significant engineering time to accomplish ...”

Interestingly, there are no significant differences across economies and sub-regions regarding the barriers faced in fully implementing IPv6.

1 | Lack of demand from customers

A perceived lack of customer demand is preventing a majority of Members from deploying IPv6 outside their core networks. More than half (53%) of all respondents indicate this is the main issue for them. This rises to 61% of Members in South East Asia and 60% in Oceania.

Unlike in 2018 when ISPs, software vendors and telecommunication / mobile operators were significantly more likely to report customer readiness and demand was the primary barrier to implementation of IPv6, this year there are no significant differences across organisation types.

Feedback from the interviews also indicated that, although a majority of those interviewed had deployed IPv6 in their core networks, one of the reasons they had not progressed to full deployment was because of lack of customer demand.

2 | Lack of knowledge and expertise

A lack of knowledge and expertise in IPv6 deployment within organisations (31%) was the next most cited challenge affecting the transition to IPv6.

Thirty-one percent (31%) of Survey respondents indicated that skill deficiencies are one of the top three challenges affecting their organisations ability to deploy IPv6. This rises to 39% of respondents in LDEs and 37% in South Asia.

3 | Lack of customer premise equipment (CPE) that supports IPv6

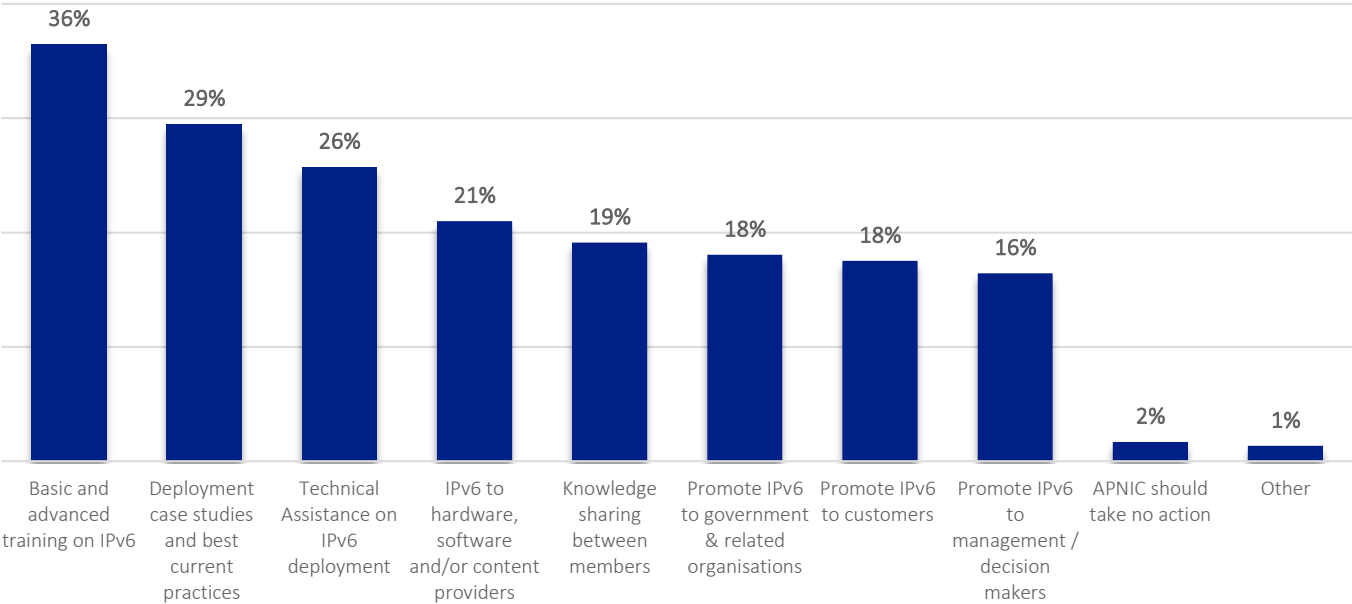
Reflecting feedback provided in interviews conducted before the Survey, a combination of a lack of CPE that supports IPv6 (26%) and lack of support amongst vendors (11%) and upstream providers (8%) also hampers full deployment of IPv6.

At 36%, ISPs were significantly more likely than other respondent groups to indicate that lack of CPE presented challenges to their IPv6 deployment. A higher proportion of software vendors (67%) also indicated that they had not fully deployed IPv6 because their upstream providers or peers do not support it.

Interviews with Members suggested that equipment vendors favoured investment in IPv4 support at the expense of IPv6, and that APNIC needed to increase its work in the promotion of IPv6 amongst vendors and content providers.

Which of the following APNIC activities do you believe are the most important to encouraging IPv6 adoption in the APNIC region?

(Members only: Select up to 2. Base n= 1,119; Total mentions: 2,091)



1 | Training, Information Sharing & Technical Assistance

Of the eight potential activities suggested to encourage IPv6 deployment, 36% of respondents indicated that providing basic and advanced training is the most important way APNIC can encourage IPv6 adoption in the region.

Demand for IPv6 training is relatively consistent across all regions and economies this year, although slightly higher in LDEs (42%) and in South Asia (40%)

At 29%, sharing deployment case studies and best practices about IPv6 is also supported by Members, with those in East Asia (35%) and Oceania (32%) most likely to favour these activities.

Continuing the technical training and assistance theme, just over a quarter (26%) of respondents believe that providing technical assistance on IPv6 deployment is important to encourage IPv6 adoption in the region.

2 | Promotion of IPv6

Consistent with feedback provided in individual interviews, many respondents also believe that APNIC can aid the transition to IPv6 by promoting it to various stakeholders, particularly hardware, software and content providers.

Just over one in five (21%) respondents want APNIC to promote IPv6 to hardware, software and content providers, and 18% favour similar promotion to governments and related organisations, and to business and retail customers.

Much of the verbatim feedback about adoption of IPv6 also focused on the need for promotion. Respondents called for APNIC to “get vendors to have default IPv6 capability” and to “create a safe dialogue in encouraging vendors to put more resources into the IPv6 feature development”.

Other comments included that there was little benefit for IPv6 because “IPv6 has no business benefit. It is too technically complex to implement and support, not widely supported and the ROI fails.”

Which of the following APNIC activities do you believe are the most important to encouraging IPv6 adoption in the APNIC region?

(Members only. Select up to 2. Base n= 1,119; Total mentions: 2,091)

	Total	East Asia	Oceania	SE Asia	South Asia	LDEs	Others
Sample size	1119	165	217	296	397	353	766
Providing basic and advanced training on IPv6	36%	30%	34%	36%	40%	42%	34%
Sharing deployment case studies and best current practices about IPv6	29%	35%	32%	29%	27%	27%	31%
Providing Technical Assistance on IPv6 deployment	26%	15%	20%	28%	33%	31%	23%
Promoting IPv6 to hardware, software and/or content providers	21%	26%	24%	17%	21%	18%	23%
Facilitating knowledge sharing between member organisations on IPv6 deployment experiences	19%	19%	19%	16%	22%	24%	17%
Promoting IPv6 to government and related organisations	18%	24%	14%	21%	18%	17%	19%
Promoting IPv6 to customers (business and retail)	18%	22%	16%	19%	14%	15%	19%
Promoting IPv6 to management and/or decision makers	16%	19%	16%	19%	14%	14%	18%
APNIC should take no action to promote or assist with the deployment of IPv6	2%	1%	3%	2%	1%	1%	2%
Other	1%	2%	3%	1%	0%	0%	2%

Note: Segments exclude respondents from non-APNIC regions included in the 'Total'
'Other' segment includes developed and developing economies

Significantly higher / lower than total



RPKI / ROA / ROV

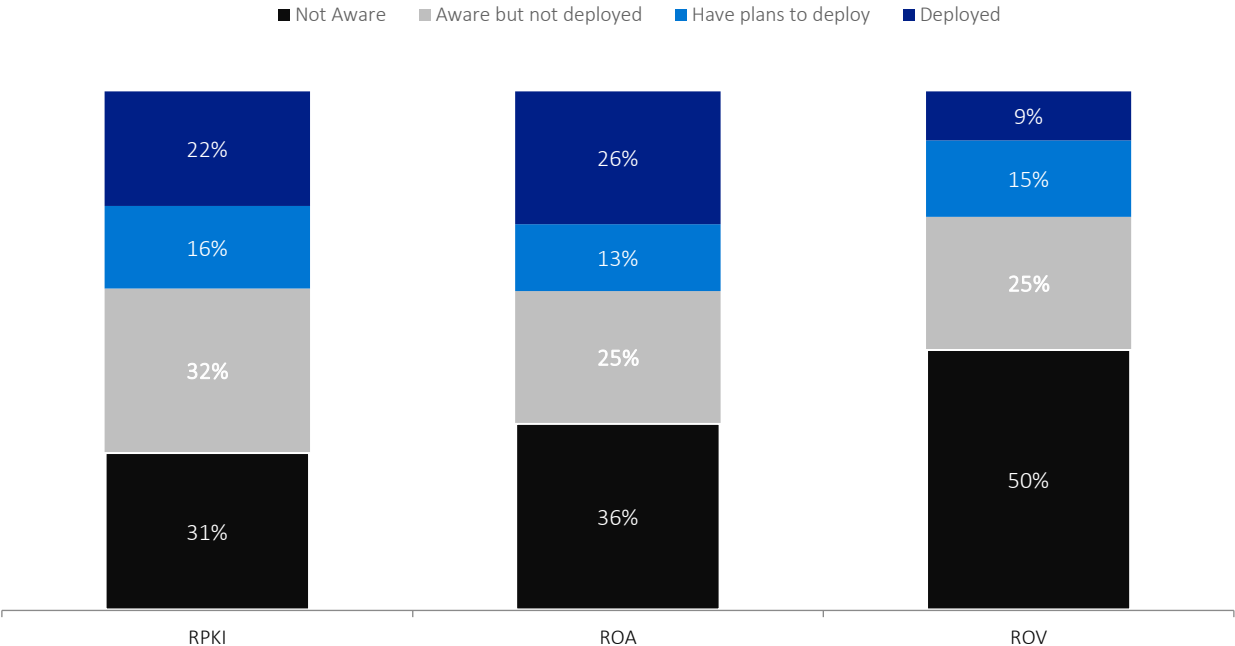
This year, the Survey was extended to canvass awareness and usage of Resource Public Key Infrastructure (RPKI), Route Origin Authorisation (ROA) and Route Origin Validation (ROV) technologies as a means to improve network security. As was evident in the feedback provided in individual interviews, use of RPKI has increased substantially since 2018. Twenty-two percent (22%) on Members have deployed RPKI, and a further 16% have plans to deploy it. Deployment of RPKI is highest in South Asia (26%) and LDEs (31%).

Notwithstanding higher usage, nearly two thirds of Members are either not aware of RPKI (31%) or are aware of it but have not deployed it (32%).

Deployment of ROA is slightly higher than RPKI at 26%, with a further 13% indicating they have plans to deploy. Again, deployment is highest in LDEs (36%) and South Asia (31%). In contrast, 42% of Members in Oceania and 39% in developed or developing economies (39%) have no awareness of ROA.

Only 9% of respondents have deployed ROV in their networks. Half report no awareness at all of the technology, and another quarter are aware of it, but have not deployed it. Among the regions, South Asia Members are most likely to indicate they have deployed ROV (12%), while only 5% of respondents from Oceania have ROV in their networks.

Please indicate the extent to which you are aware of, and have deployed, the following?
(All respondents. Base n= 1,624)



RPKI

Twenty-two percent (22%) of respondents have deployed RPKI, with those in LDEs (31%) and South Asia (26%) more likely than other economies or regions to have RPKI in their networks.

	Members	Stakeholders	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	1119	503	255	296	439	561	475	1147
I am not aware of this	27%	38%	27%	33%	31%	31%	30%	31%
I am aware of this, but have not deployed it	28%	39%	38%	36%	30%	27%	25%	34%
We have plans to deploy	17%	13%	11%	17%	17%	16%	15%	16%
This is deployed in our network	27%	10%	23%	14%	23%	26%	31%	19%

ROA

Almost a third (32%) of Members have registered ROAs in their networks. Again, more Members in LDEs (36%) and South Asia (31%) report ROA registration than other regions and economies.

	Members	Stakeholders	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	1119	503	255	296	439	561	475	1147
I am not aware of this	32%	45%	37%	42%	38%	32%	29%	39%
I am aware of this, but have not deployed it	22%	33%	28%	29%	25%	23%	21%	27%
We have plans to deploy	13%	12%	10%	10%	14%	14%	14%	13%
This is deployed in our network	32%	11%	25%	19%	23%	31%	36%	21%

ROV

Only 12% of Members have deployed ROV. Most respondents are not aware of it.

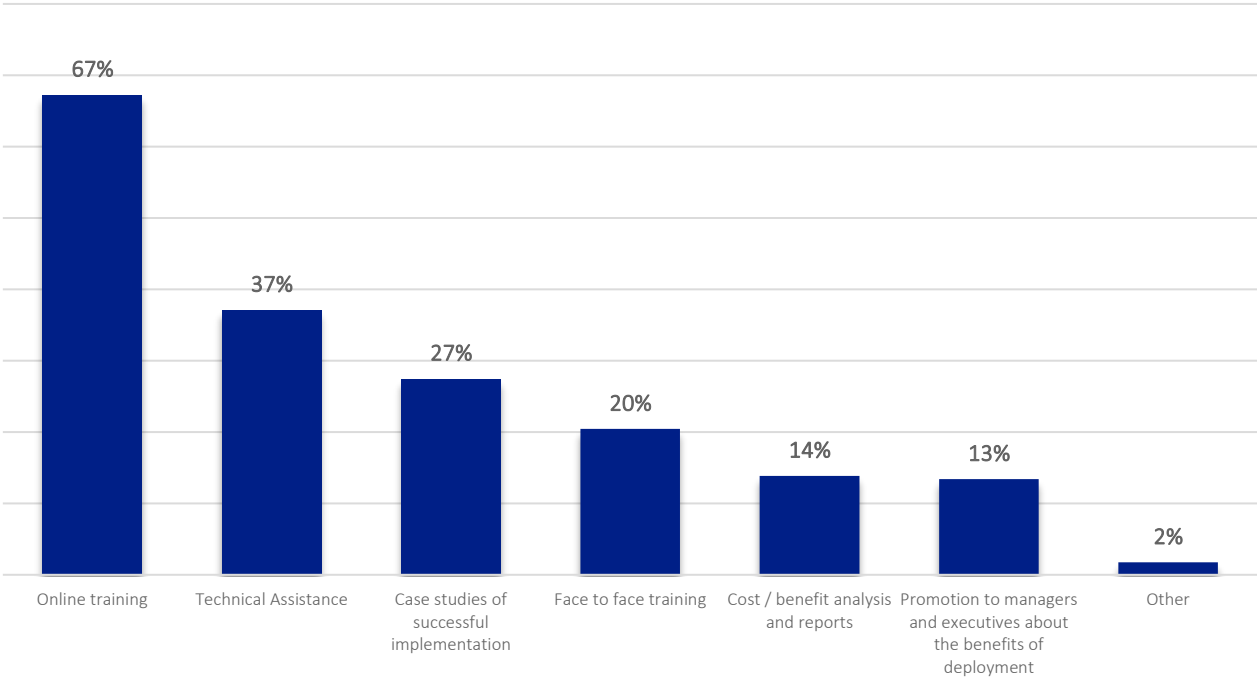
	Members	Stakeholders	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	1119	503	255	296	439	561	475	1147
I am not aware of this	48%	55%	50%	53%	50%	51%	51%	50%
I am aware of this, but have not deployed it	23%	30%	29%	30%	26%	21%	19%	28%
We have plans to deploy	17%	10%	12%	11%	15%	16%	17%	14%
This is deployed in our network	12%	4%	9%	5%	9%	12%	13%	8%

Note: Segments exclude respondents from non-APNIC regions included in the 'Total'
'Other' segment includes developed and developing economies

Significantly higher / lower than total

How could APNIC support your organisation to learn more about, or deploy RPKI / ROA / ROV?

(All respondents. Select up to 2. Base n= 1,493; Total mentions: 2,706)



1 | Online training & Technical Assistance

Of the six potential activities suggested to support respondents to learn more about, or deploy RPKI, ROA or ROV, online training was favoured by over two thirds (67%) of respondents. Technical Assistance from APNIC was favoured by 37% of respondents.

Seven in 10 (70%) respondents from South East Asia and South Asia believe that online training would help their organisation to either learn more or deploy RPKI, ROA or ROV. Members from East Asia are less likely to favour this approach, with only 57% selecting this as a preferred option. There are no differences in preferences across economy types, with 67% indicating online training would be the best support for their organisation.

Technical Assistance from APNIC is evenly supported across all regions and economies.

2 | Case studies & Face-to-face training

Just over a quarter (27%) of respondents believe that case studies demonstrating successful implementation of the technology would be the best form of support APNIC can provide to learn more about, and deploy, RPKI, ROA and ROV.

Case studies are most preferred by respondents in East Asia, with 47% indicating examples of successful implementation would be useful to them.

While one in five (20%) indicate face to face training would be the best support for their organisation, rising to 26% of respondents from least developed economies.



What can APNIC do to support deployment of RPKI, ROA and/or ROV?

Much of the feedback in the interviews conducted with Members and NIRs about the assistance APNIC could provide with network security centred around RPKI and ROA. As in this Survey, many interview participants were aware and supportive of using RPKI and ROA for routing security.

Similarly, according to interviewees and Survey feedback, the best support APNIC can provide to support deployment of RPKI, ROA and ROV is training in application and rollout of these technologies. There is also support for APNIC to promote and champion RPKI and ROA within the region.



“In general, training on RPKI, ROA & ROV by APNIC will be effective” (South East Asia)

“Push network equipment manufacturers to support RPKI already which is long overdue.” (South East Asia)

“I think that APNIC is championing [RPKI] and it’s definitely one of the hot topics right now” (South Asia)

“Presentations or workshops at NOG meetings.” (Oceania)

“Deployment needs to be broadened. ROA is not much use if only implemented by one company. Could APNIC help with broadening ROA deployment by associating it with Membership renewals?” (South East Asia)

Training, Information & Internet Development

Training and educational opportunities to help improve the technical knowledge and skills of the Internet community, as well as provision of Internet trend and benchmarking data are key components of APNIC's service provision.

To understand preferences around training services, and gauge interest in the type of benchmarking data that would be of value, the Survey asked about:

- Attendance at training events in the past two years
- What prevents respondents from attending training
- The training activities and formats that provide the most value
- Suggested topics for inclusion into APNIC training
- Internet trends and benchmarking data that would provide the most value

Two new questions were also added to the Survey this year canvassing opinion about where APNIC should focus its efforts if additional resources were available to support Internet development.



Training attendance

With over two in five (40%) respondents indicating they attended training in the past two years, up from 27% in 2018, the Survey asked respondents to identify the type of training they had used, if they attended.

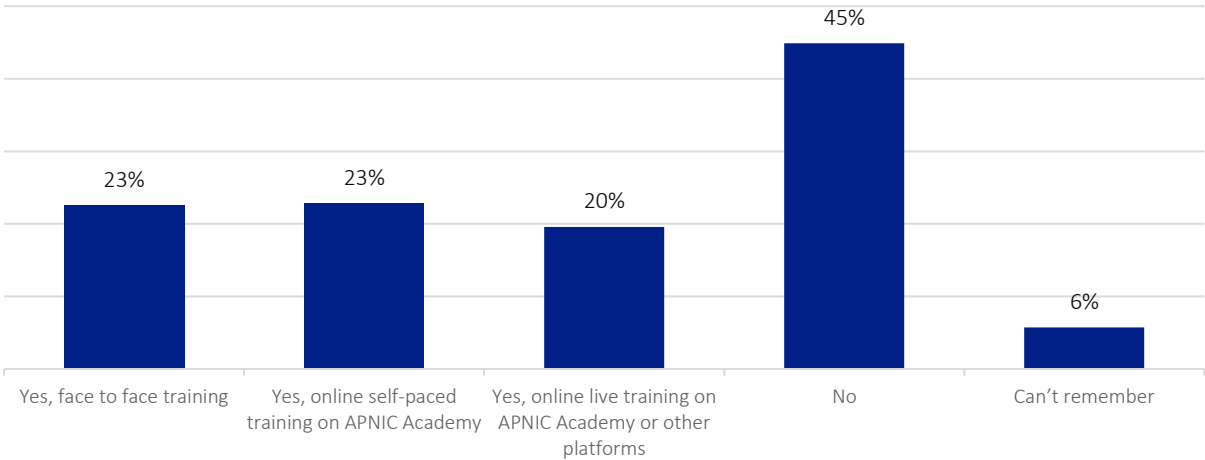
Nearly a quarter of respondents (23%) had attended face to face training or online, self-paced training on the APNIC Academy. A further one in five (20%) had completed online live training on APNIC Academy or other platforms.

Respondents from South Asia (19%) were the least likely to have attended face to face training, instead being more likely to indicate they had undertaken online, self-paced training on the APNIC Academy (29%). Unsurprisingly, respondents from LDEs are more likely to report they have attended some form of APNIC training than their developed or developing economy counterparts.

Forty-five percent (45%) of Survey respondents indicated they had not attended any training in the past two years. Those from East Asia (55%) were significantly more likely to have not taken part in training than other regions.

Have you completed any APNIC training in the past two years?

(All respondents: n=1,624)



	Members	Stakeholders	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	1119	503	255	296	439	562	476	1147
Yes, face to face training	23%	23%	25%	27%	26%	19%	26%	21%
Yes, online self-paced training on APNIC Academy	22%	25%	12%	19%	23%	29%	29%	20%
Yes, online live training on APNIC Academy or other platforms	20%	19%	13%	17%	23%	22%	22%	19%
No	46%	43%	55%	48%	37%	43%	39%	48%
Can't remember	5%	8%	6%	3%	9%	5%	5%	6%

Note: Segments exclude respondents from non-APNIC regions included in the 'Total'
'Other' segment includes developed and developing economies

Significantly higher / lower than total

Why have you not attended training over the past two years?
(All respondents who have not attended training: n=731)

	Members	Stakeholders	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	515	216	141	143	161	242	186	545
I didn't know about the training opportunities	36%	51%	40%	35%	39%	46%	45%	39%
I don't have time	22%	19%	30%	30%	20%	8%	6%	26%
It's too expensive	18%	14%	9%	10%	22%	25%	27%	14%
The location(s) are not suitable	16%	12%	18%	13%	19%	12%	9%	17%
The courses are not suited to my role / job	9%	14%	9%	15%	9%	11%	8%	12%
I couldn't get management approval	11%	9%	9%	9%	15%	8%	11%	10%
Training is not offered in my local language	9%	6%	14%	1%	6%	12%	16%	5%
Other	7%	4%	6%	9%	7%	4%	5%	7%
The topics are too basic	4%	1%	2%	5%	4%	2%	2%	3%

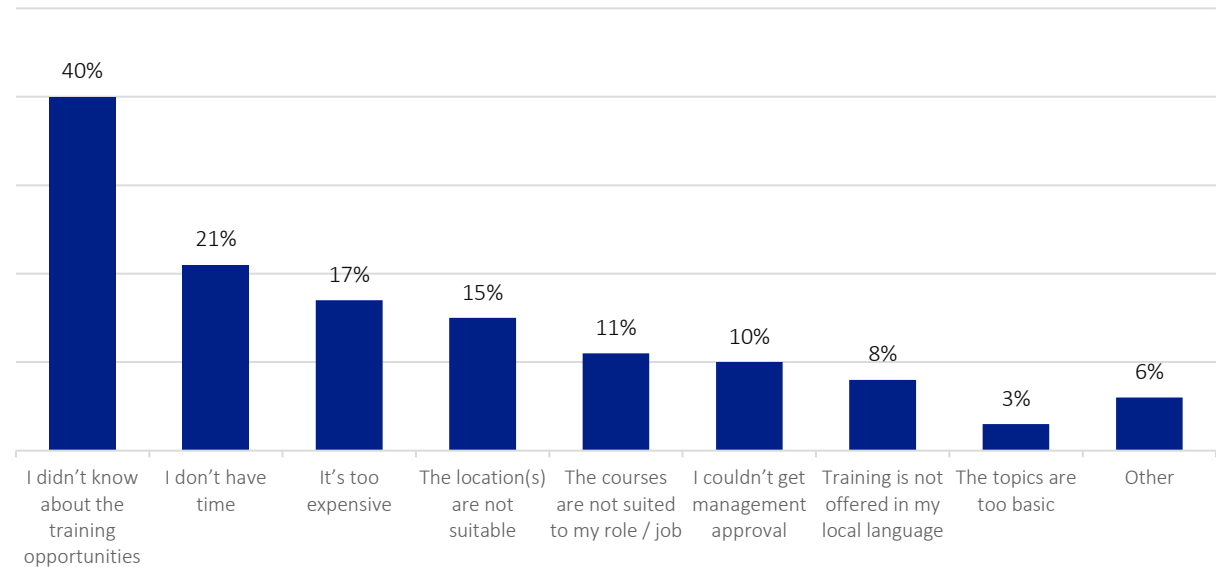
Note: Segments exclude respondents from non-APNIC regions included in the 'Total'
'Other' segment includes developed and developing economies

Significantly higher / lower than total

Perhaps surprisingly, two in five (40%) respondents had not attended training because they were not aware of the opportunities that were available.

For others, time (21%), cost (17%) and location (15%) are the main barriers to participation in training activities. Time pressures are more prevalent in East Asia (30%), Oceania (30%) and developed and developing economies (26%), while cost is the biggest barrier in South Asia (25%) and LDEs (27%).

Training not offered in the local language prevents attendance for 16% of respondents in LDEs and 14% in East Asia.





Training preferences

To understand training preferences, the Survey asked the types of activities that would provide most value. From a list of 11, respondents could choose up to five activities.

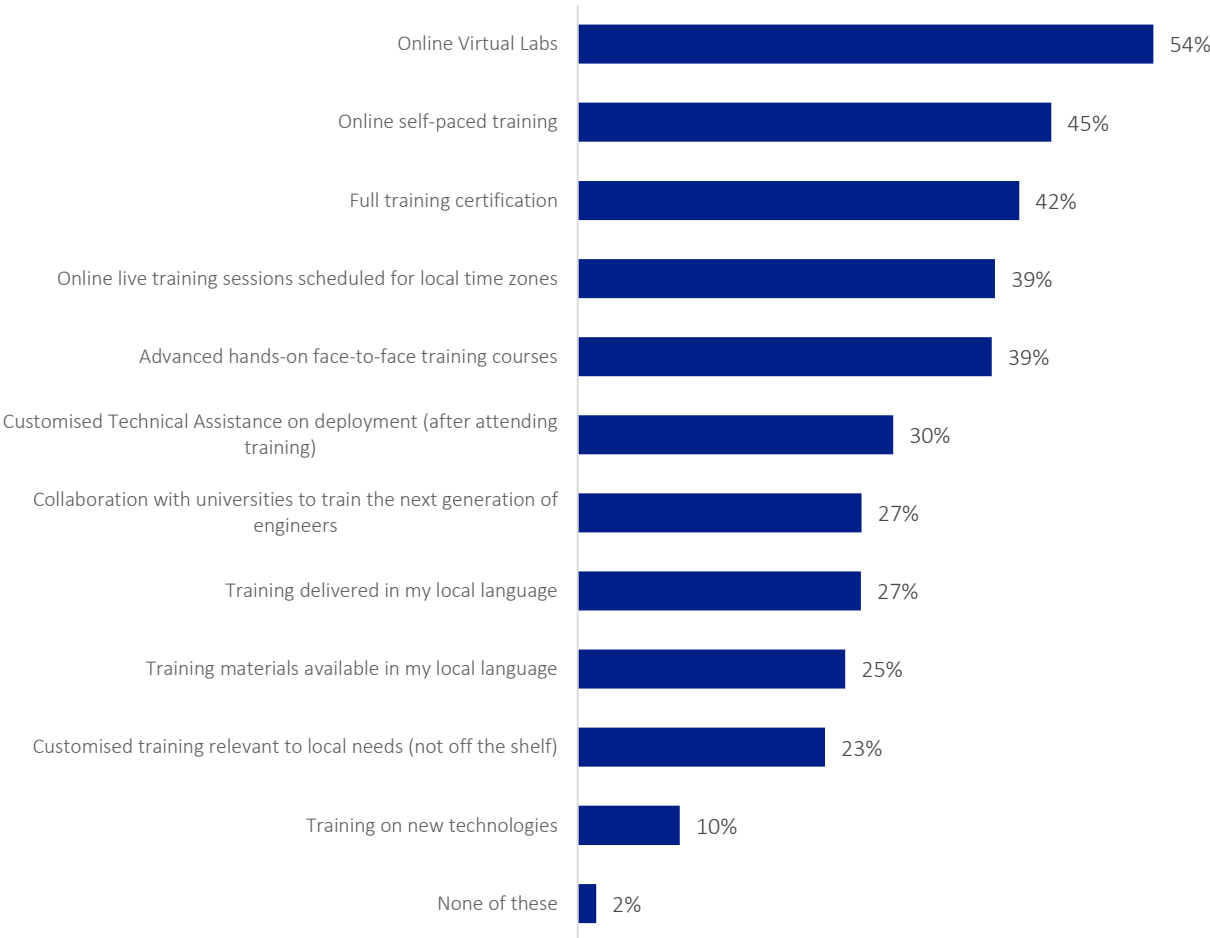
Online activities offer the most value, with online Virtual Labs and self-paced training preferred by approximately half of respondents, at 54% and 45% respectively.

Full training certification would be of value to 42% of respondents. Online live training sessions scheduled for local time zones and advanced hands-on face-to-face training would be of value to a similar proportion of respondents (both 39%). Around a quarter of responses indicate that having training delivered (27%) and training materials available in local language (25%) would provide the most value.

Although frequently mentioned in the individual interviews with Members and NIRs, training on new technologies was selected by only 10% of respondents. When asked to specify which new technologies, Software Defined Networking (SDN), the Internet of Things (IoT), IPv6, and cyber security were most often mentioned.

Which of the following training activities would be of MOST value to your organisation?

(All respondents Select up to 5. Base n=1,624; Total mentions: 5,872)



Emphasising the diversity among APNIC Members, there are differences in the types of training activities that would provide the most value to respondents in different regions.

Those in Oceania (58%) and developed and developing economies (48%) favour online self-paced training over other activities. LDEs and respondents from South Asia are more likely to indicate that advanced hands-on training, customised Technical Assistance on deployment, and collaboration with universities to train the next generation are valuable than other regions and economies (48% and 53% respectively)

Respondents from East Asia are more likely to indicate that training (40%) and training materials (46%) delivered in the local language would be of most value to their organisation.

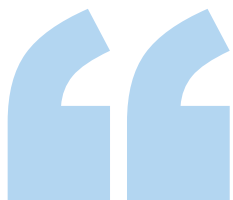
Which of the following training activities would be of MOST value to your organisation?

(All respondents Select up to 5. Base n=1,624; Total mentions: 5,872)

	Member	Stakeholder	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	1120	503	255	296	439	562	476	1147
Online Virtual Labs	55%	52%	46%	56%	53%	57%	57%	53%
Online self-paced training	44%	45%	36%	58%	45%	40%	36%	48%
Full training certification	40%	46%	24%	42%	46%	46%	44%	41%
Online live training sessions scheduled for local time zones	39%	40%	28%	44%	40%	43%	36%	41%
Advanced hands-on face-to-face training courses	38%	42%	31%	36%	37%	48%	53%	33%
Customised Technical Assistance on deployment	29%	30%	23%	28%	31%	35%	37%	27%
Collaboration with universities to train the next generation	24%	33%	22%	21%	29%	31%	32%	25%
Training delivered in my local language	27%	26%	40%	9%	31%	28%	30%	25%
Training materials available in my local language	24%	27%	46%	6%	29%	25%	30%	23%
Customised training relevant to local needs	22%	25%	20%	19%	25%	27%	29%	21%
Training on new technologies	9%	12%	4%	8%	10%	13%	11%	9%
None of these	2%	1%	1%	3%	2%	1%	1%	2%

Note: Segments exclude respondents from non-APNIC regions included in the 'Total'
'Other' segment includes developed and developing economies

Significantly higher / lower than total



Are there any training topics you would like APNIC to provide?

Respondents were next asked to indicate in their own words the training topics that they would like APNIC to provide.

Similar to the 2018 Survey, the most frequently mentioned topics for potential APNIC training were IPv6 deployment and network and cyber security training. In respect of security training, there were many mentions of training on BGP, RPKI, ROA and ROV. Training on Software Defined Networking (SDN) and SD-WAN were also prevalent.

Although less frequently mentioned, training on newer technologies such as the Internet of Things (IoT), 5G and Artificial Intelligence (AI) are of interest to some Members.



“Cyber & Wireless security, IPv6 deployment, network security and automation, emerging network technologies”

Oceania

“RPKI, Security aspects, BGP hijacking & best practices.” (South Asia)

“IPv6 deployment and Network Security.” (South Asia)

“Internet technology trending training for CEO/CTOs to encourage to deploy new technology.” (East Asia)

“Cyber Security and IoT security related training programs will be very much helpful.” (South Asia)

“Network automation and security.” (South East Asia)

Are there any training topics you would like APNIC to provide?





Trend and benchmarking data

Respondents were next asked the types of Internet trend and benchmarking data would be of most use to their organisation. A list of nine suggested topics were offered and respondents could choose up to three that would be of most use.

In line with the 2018 results, data about network threats and security, such as routing anomalies, intrusion detection and security alerts, was selected as the most useful information by a majority of respondents (54%). Those in Oceania (68%) were significantly more likely to indicate this information was the most useful for their organisation.

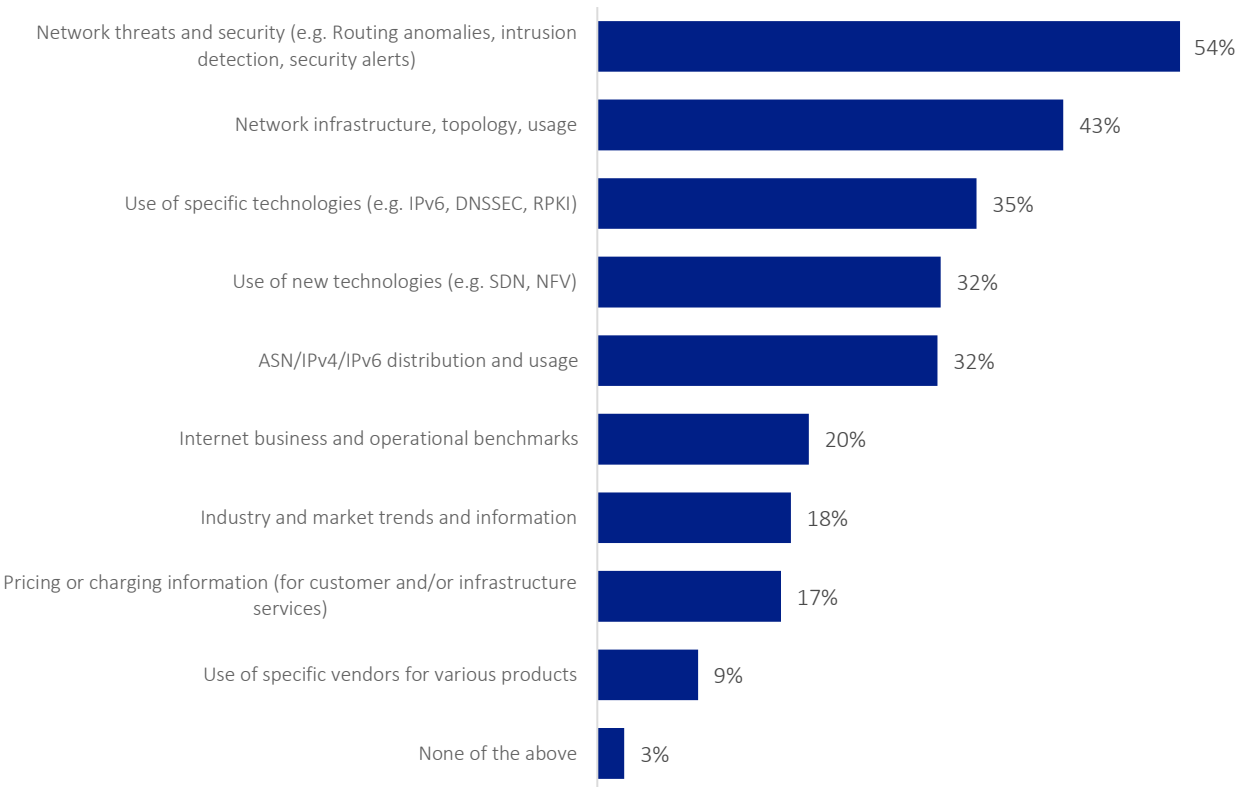
Information about network infrastructure, topology and usage was selected by 43% of respondents. This was also mentioned in the individual interviews, particularly in relation to COVID-19, as organisations were experiencing increases in Internet traffic and usage as more people were forced to work and study from home.

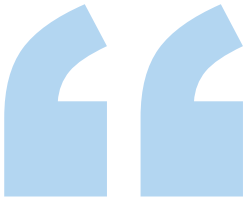
Use of specific technologies like IPv6, DNSSEC and RPKI (35%), and use of new technologies such as SDN, NFV and IoT (32%) would be of use to around a third of respondents. These topics were also frequently mentioned in response to the free text question regarding other Internet trend and benchmark information that would provide value.

Respondents from South East Asia and those in LDEs are significantly less likely to be interested in the use of specific technologies like IPv6, DNSSEC and RPKI than other regions or economies.

What types of Internet trend and benchmarking data services would be of MOST use to your organisation?

(All respondents. Select up to 3. Base n=1,624; Total mentions: 4,271)





Is there any other Internet trend and benchmark information that would be of value to your organisation?

When asked if there is any other Internet trend and benchmark information that would be of value, information about network and cyber security, RPKI, ROA and DNSSEC were frequently mentioned by respondents in free text. Respondents called for ‘trends on cyber crime activities’ and ‘security breach information’, as well as how to ‘optimize routing security and use ROA and RPKI’.

Trends around usage, bandwidth, Internet capacity and traffic were also cited by respondents as being useful. Information on how to “measure network performances and benchmarking” and “more information about topology management and traffic management” would provide many with value. Others wanted data about “regional traffic usage and where more networks peer in the region.”

More information about new technologies, cloud computing and IoT were also mentioned. Respondents mentioned that “introduction to new technologies and training” would be of value, as well as trends and information on “digital transformation, IPv6 and domain for IoT, 5G.”

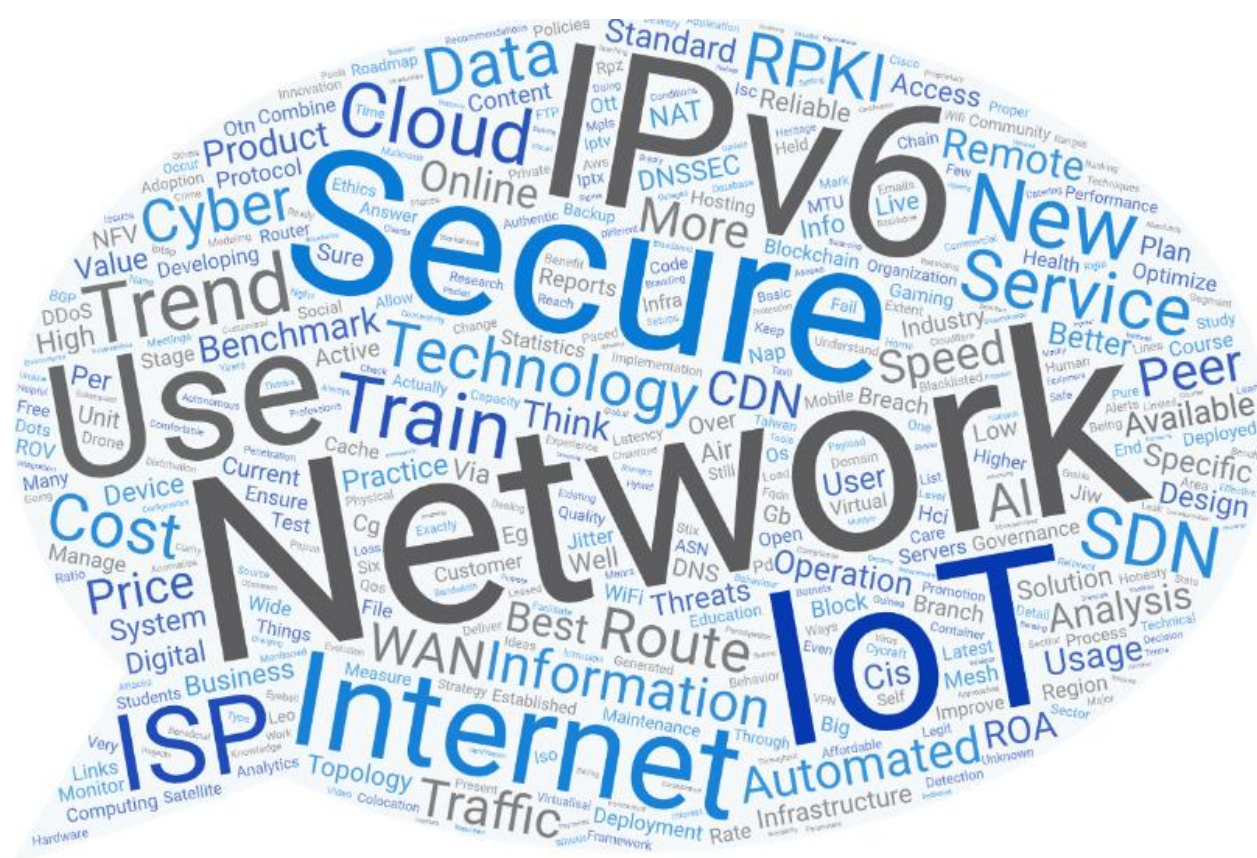
What types of Internet trend and benchmarking data services would be of MOST use to your organisation? (All respondents Select up to 3. Base n=1,624; Total mentions: 4,271)

	Members	Stakeholders	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	1120	504	255	296	439	562	476	1148
Network threats and security (e.g. Routing anomalies, intrusion detection, security alerts)	54%	54%	56%	68%	49%	51%	54%	54%
Network infrastructure, topology, usage	43%	44%	39%	46%	42%	46%	48%	41%
Use of specific technologies (e.g. IPv6, DNSSEC, RPKI)	36%	35%	40%	40%	33%	31%	29%	38%
Use of new technologies (e.g. SDN, NFV)	33%	31%	37%	28%	33%	31%	30%	33%
ASN/IPv4/IPv6 distribution and usage	32%	30%	29%	17%	32%	40%	36%	30%
Internet business and operational benchmarks	19%	21%	15%	14%	23%	23%	25%	17%
Industry and market trends and information	18%	18%	26%	17%	18%	15%	12%	21%
Pricing or charging information (for customer and/or infrastructure services)	16%	18%	16%	16%	20%	17%	20%	16%
Use of specific vendors for various products	9%	10%	5%	10%	10%	11%	11%	9%
None of the above	3%	2%	1%	4%	3%	2%	1%	3%

Note: Segments exclude respondents from non-APNIC regions included in the ‘Total’
‘Other’ segment includes developed and developing economies

Significantly higher / lower than total

Is there any other Internet trend and benchmark information that would be of value to your organisation?





Internet development

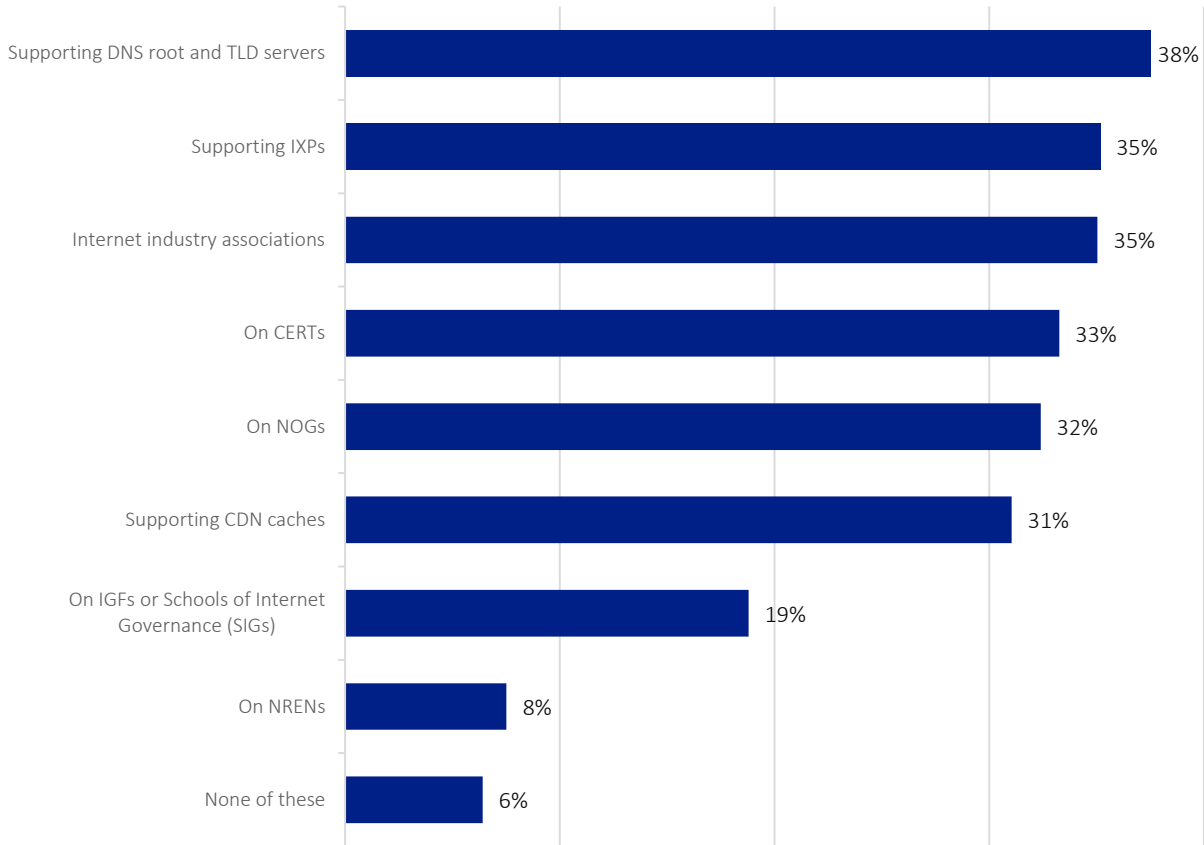
The 2020 Survey included two new questions, canvassing opinions about where APNIC should focus its efforts if additional resources were available for Internet development. The first question sought to understand where APNIC could assist with community development or supporting shared infrastructure, and respondents could choose up to three areas from a list of eight.

Responses were relatively evenly distributed across six of the focus areas. Thirty-eight percent (38%) of respondents want a focus on supporting DNS root and TLD servers, with 35% selecting IXPs or Internet industry associations. There was no differences in support for DNS root and TLD servers or Internet industry associations across regions. Respondents from South East Asia (46%) and developed and developing economies (37%) are more likely to prefer a focus on supporting IXPs than their sub-regional or LDE counterparts.

Around a third of respondents also want APNIC to focus on NOGs (32%), CERTs (33%) and supporting CDN caches (31%). Respondents from LDEs (42%) are significantly more likely to prefer a focus on NOGs than other economies, who indicate that CERTs (36%) are more important to them as a focus for APNIC.

If additional resources were available for Internet development, through assistance for community organisations or supporting shared infrastructure, where do you want APNIC to focus its efforts?

(All respondents. Select up to 3. Base n=1,624; Total mentions: 3,850)



If additional resources were available for Internet development, through assistance for community organisations or supporting shared infrastructure, where do you want APNIC to focus its efforts?

(All respondents Select up to 3. Base n=1,624; Total mentions: 3,850)

	Members	Stakeholders	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	1120	504	255	296	439	562	476	1148
Supporting DNS root and TLD servers	38%	36%	32%	37%	38%	40%	37%	38%
Supporting IXPs	37%	31%	34%	36%	46%	27%	30%	37%
Internet industry associations	34%	38%	33%	33%	36%	36%	37%	34%
On CERTs	31%	39%	36%	44%	32%	28%	25%	36%
On NOGs	34%	28%	34%	32%	30%	34%	42%	28%
Supporting CDN caches	33%	26%	29%	20%	32%	41%	40%	27%
On IGFs or Schools of Internet Governance (SIGs)	16%	26%	18%	13%	19%	23%	22%	17%
On NRENs	6%	10%	6%	2%	8%	11%	11%	6%
None of these	7%	5%	3%	10%	6%	6%	5%	7%

Note: Segments exclude respondents from non-APNIC regions included in the 'Total'
'Other' segment includes developed and developing economies

Significantly higher / lower than total

Emphasising the diversity of the APNIC community, differences across APNIC Members, Stakeholders, regions and economies are apparent for many of the focus areas.

APNIC Members are significantly more likely to want APNIC to focus on supporting IXPs, NOGs and CDN caches in the region than other Stakeholders, who would prefer a focus on CERTs.

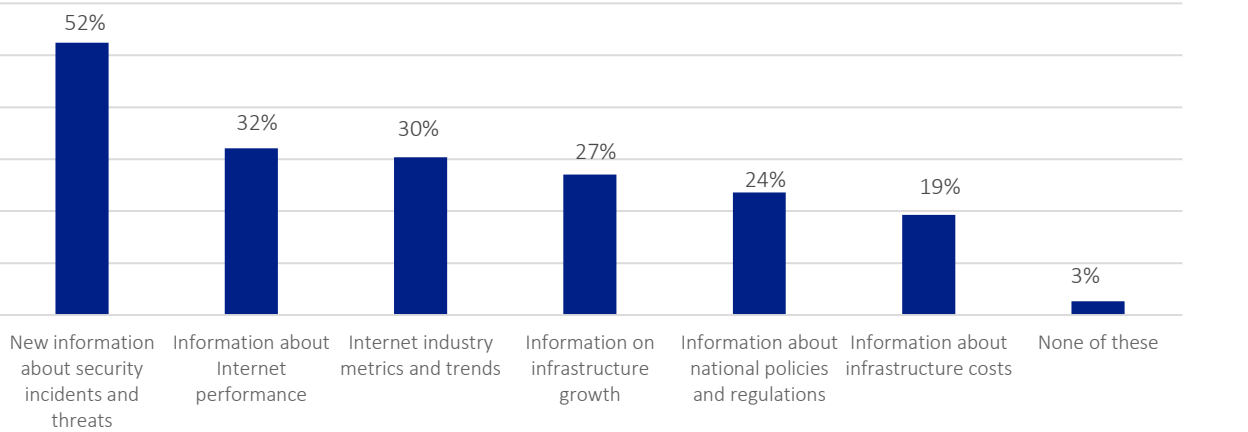
Respondents from Oceania (44%) prefer a greater focus on CERTs, while LDEs and those in South Asia are more likely to indicate that supporting CDN caches would be the best area for APNIC to concentrate on.

The second question asked respondents what type of information services would provide their organisation with the most benefit. From a list of six topics, respondents could choose up to two.

Reflecting the operational challenges organisations face managing network security, a majority of respondents (52%) are interested in new information about security incidents and threats. Those in Oceania (61%) are more likely to believe this information would provide them with the most benefit than respondents in other regions.

Information on Internet performance (32%) and industry metrics and trends (30%) would also provide value, although LDEs and those in South Asia are less likely to believe that Internet industry metrics and trends would provide them a benefit.

If additional resources were available for Internet development in information services, what would provide your organisation with the most benefit?
(All respondents. Select up to 2. Base n=1,624; Total mentions: 3,043)



	Members	Stakeholders	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	1120	504	255	296	439	562	476	1148
New information about security incidents and threats	52%	54%	49%	61%	52%	51%	53%	52%
Information about Internet performance	33%	29%	26%	28%	37%	34%	33%	32%
Internet industry metrics and trends	32%	27%	43%	28%	35%	23%	23%	33%
Information on infrastructure growth	28%	25%	21%	18%	27%	35%	34%	24%
Information about national policies and regulations	21%	29%	25%	28%	20%	22%	21%	24%
Information about infrastructure costs	18%	21%	22%	15%	17%	22%	22%	18%
None of these	3%	3%	2%	5%	2%	2%	2%	3%

Note: Segments exclude respondents from non-APNIC regions included in the 'Total'
'Other' segment includes developed and developing economies

Significantly higher / lower than total

Appendix

APNIC

Definitions of Sub-regions

East Asia	
CN	China
KP	Democratic People's Republic of Korea
HK	Hong Kong Special Administrative Region of China
JP	Japan
KR	Republic of Korea
MN	Mongolia
MO	Macao Special Administrative Region of China
TW	Taiwan

South Asia	
AF	Afghanistan
BD	Bangladesh
BT	Bhutan
IN	India
IO	British Indian Ocean Territory
LK	Sri Lanka
MV	Maldives
NP	Nepal
PK	Pakistan

South-East Asia	
BN	Brunei Darussalam
CX	Christmas Island
ID	Indonesia
KH	Cambodia
LA	Lao People's Democratic Republic
MM	Myanmar
MY	Malaysia
PH	Philippines
SG	Singapore
TH	Thailand
TL	Timor-Leste
VN	Viet Nam

Oceania	
AS	American Samoa
AU	Australia
CK	Cook Islands
FJ	Fiji
PF	French Polynesia
FM	Federated States of Micronesia
GU	Guam
KI	Kiribati
MH	Marshall Islands
MP	Northern Mariana Islands
NC	New Caledonia
NF	Norfolk Island
NR	Nauru
NU	Niue
NZ	New Zealand
PF	French Polynesia
PG	Papua New Guinea
PW	Palau
SB	Solomon Islands
TK	Tokelau
TO	Tonga
TV	Tuvalu
VU	Vanuatu
WF	Wallis & Fortuna Islands
WS	Samoa

Definitions of Economies*

Developed/Developing Economies	
AS	American Samoa
AU	Australia
IO	British Indian Ocean Territory
BN	Brunei Darussalam
CN	China
CX	Christmas Island
CC	Cocos and Keeling Islands
CK	Cook Islands
KP	Democratic People's Republic of Korea
FJ	Fiji
PF	French Polynesia
TF	French Southern Territories
GU	Guam
HK	Hong Kong Special Administrative Region of China
IN	India
ID	Indonesia
JP	Japan
MO	Macao Special Administrative Region of China
MY	Malaysia
MV	Maldives
MH	Marshall Islands
FM	Federated States of Micronesia
MN	Mongolia
NR	Nauru
NC	New Caledonia
NZ	New Zealand
NU	Niue
NF	Norfolk Island
MP	Northern Mariana Islands
PK	Pakistan
PW	Palau
PG	Papua New Guinea
PH	Philippines
PN	Pitcairn
KR	Republic of Korea
WS	Samoa
SG	Singapore
LK	Sri Lanka
TW	Taiwan
TH	Thailand
TK	Tokelau
TO	Tonga
VN	Viet Nam
WF	Wallis and Fortuna Islands

Least Developed Economies	
AF	Afghanistan
BD	Bangladesh
BT	Bhutan
KH	Cambodia
KI	Kiribati
LA	Lao People's Democratic Republic
MM	Myanmar
NP	Nepal
SB	Solomon Islands
TL	Timor-Leste
TV	Tuvalu
VU	Vanuatu

*United Nations Classifications of Economies can be found at <http://unstats.un.org/unsd/methods/m49/m49regin.htm>

About Survey Matters

Survey Matters specialise in providing services to the Member-based and not for profit sector.

Survey Matters have helped a wide range of organisations understand their value proposition - what is important to respondents, how the organisation can help and how satisfied they are with their performance. We also work with the sector to generate and build industry data and knowledge to support advocacy, promotion, industry development and marketing activities.

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ACKNOWLEDGEMENTS

In conclusion, we would like to take the opportunity to thank all respondents for participating in the 2020 APNIC Survey. Your input is extremely valuable.

The robust sample size of 1,624 provides APNIC with clear direction on the preferences and opinions of the Internet community.

The 2020 Survey highlighted many of the challenges facing the Internet community, and provided many suggestions for ways in which APNIC can assist Members and other community Stakeholders.

We trust this information forms a solid basis upon which the APNIC EC and Secretariat can craft their strategic plans and service delivery for the coming two years.

If there are any questions about this report, please do not hesitate to contact Survey Matters.



2020 APNIC Survey Presentation to Executive Council

Methodology

Community consultations

- This year, the qualitative aspect of the Survey used individual interviews, conducted via video conference or telephone call. The main effects of this change to the format were:
 1. More economies were consulted, providing a greater spread of opinion, and a wider range of issues and views were apparent
 2. Fewer Members from the same economy were consulted, and therefore the individual views expressed were not able to be tested across a wider audience for validation
- Forty-one interviews were conducted across 27 economies:
 - 28 APNIC Members
 - 7 NIRs
 - 6 APNIC Stakeholders

Key interview outcomes

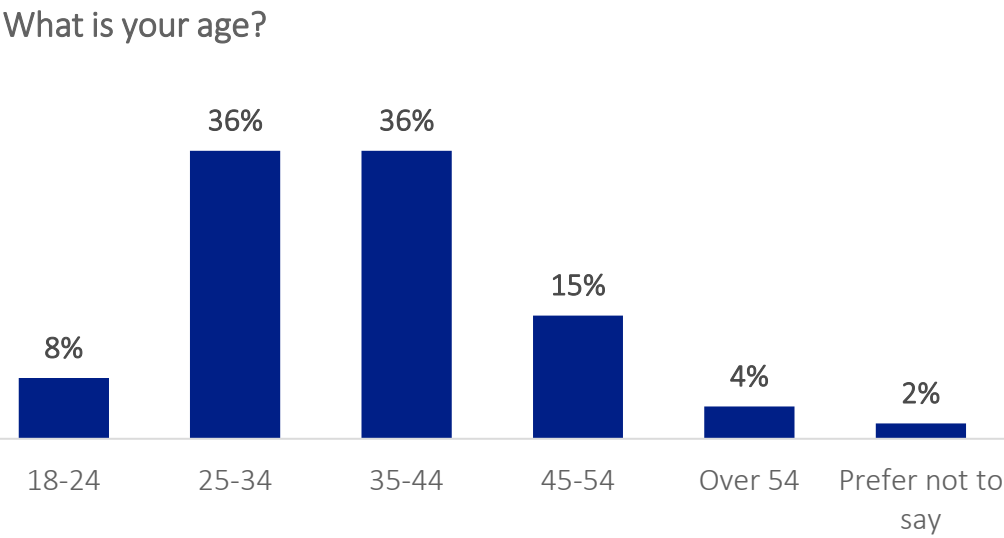
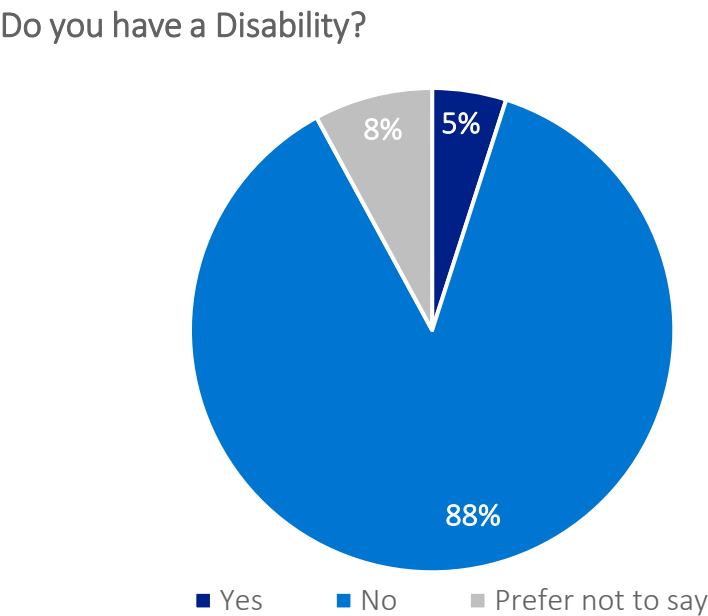
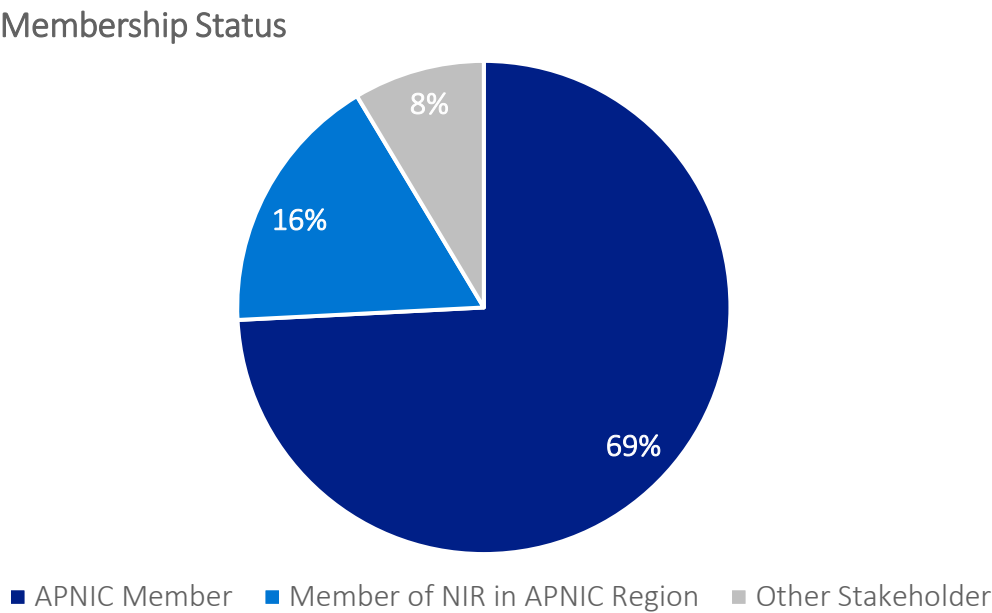
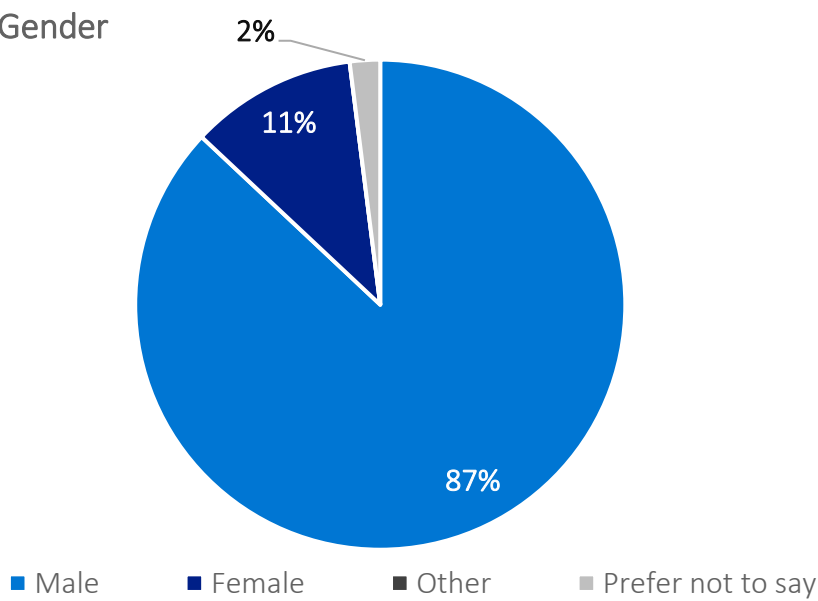
- As a result of conducting interviews in more economies, a wider variety of challenges were apparent
- Network security, IPv4 scarcity and IPv6 deployment are still the main issues
- Awareness and uptake of RPKI and ROA was more prevalent
- Capacity, load, traffic management and Internet reliability was raised more frequently, as a consequence of the COVID-19 pandemic
- As IPv6 matures, some believe APNIC's role needs to evolve beyond addresses and numbering
- Calls for a greater focus from APNIC on new technologies, particularly from the NIR interviews

Methodology

Online survey

- Online survey fielded between 13 – 31 July 2020
- A total of 1,659 completed responses were received and after data cleansing only 35 were removed, leaving completed responses of 1,624. This represents an increase of 31% from 2018
- Some issues during the first week of the survey with 'Robot participation'
 - All responses from the bot were the same
 - The country code inserted was the USA
 - None of the responses got to the end of the survey, they all got to the same section and stopped
 - The survey software provider interrogated the logs and blocked a respondent ID
 - This is happening more with anonymous survey links

Sample



Region	Count	%
East Asia	255	16%
Oceania	296	18%
South East Asia	439	27%
South Asia	562	35%
Non APNIC Region	72	4%

Development Status	Count	%
Least Developed Economy (LDEs)	476	29%
Other (Developed or Developing)	1,148	71%

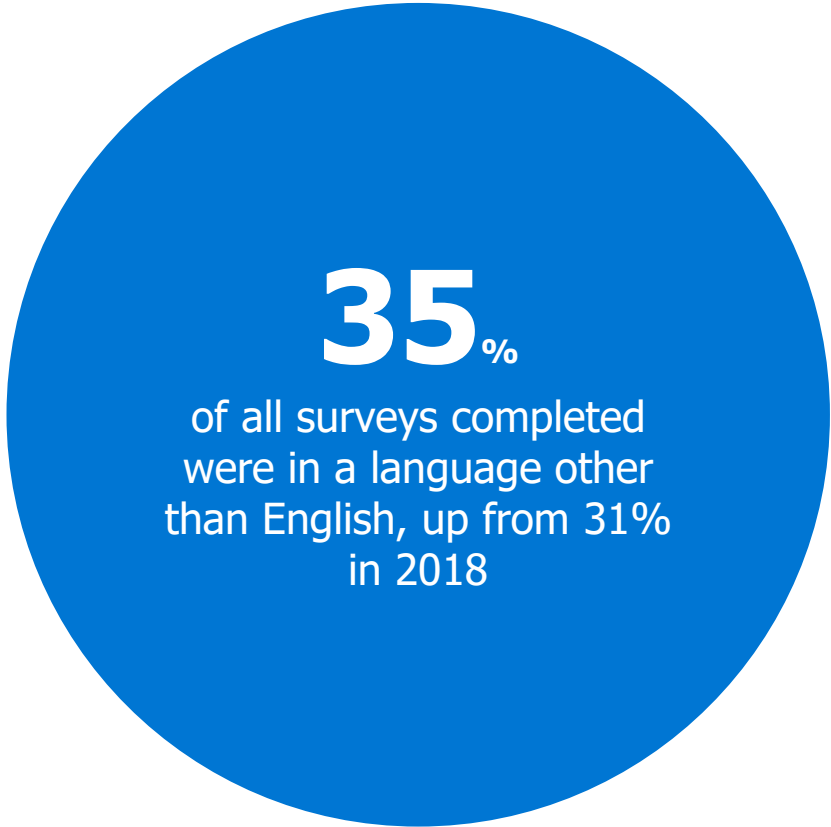
English Proficiency	Count	%
I am fluent in English	683	42%
I can understand most English and have English conversations comfortably	511	31%
I can understand some English and have basic English conversations	351	22%
I understand little English and need assistance	79	5%

Language Translations

- Survey translated into 15 languages, up from eight in 2018
- Languages chosen based on level of perceived English proficiency, Membership size and level of engagement with previous surveys
- Could not translate Khmer successfully. Community feedback indicated issues with fonts in the survey instrument

Code	Language	2018	2020
BD	Bangladesh (Bengali)	41	157
CN	Chinese Simplified	101	75
CN	Chinese Traditional	56	59
ID	Indonesian	43	62
IN	Indian (Hindi)		3
JP	Japanese	60	45
KR	Korean	9	8
MN	Mongolian	49	39
MY	Malaysian		4
MM	Myanmar (Burmese)		52
NP	Nepali		10
PH	Philippines (Tagalog)		7
TH	Thai	30	29
PK	Urdu		4
VN	Vietnamese		14
Total		389	568

Economy	Total responses	Responses in other language	% in other language
Australia	136	3	2%
Bangladesh	298	157	52%
China	68	65	99%
Guam	6	1	17%
Hong Kong Special Administrative Region of China	25	11	48%
India	109	3	3%
Indonesia	74	62	84%
Japan	50	45	90%
Lao People's Democratic Republic	4	2	50%
Macao Special Administrative Region of China	6	6	100%
Malaysia	35	4	11%
Mongolia	50	39	70%
Myanmar	111	52	46%
Nepal	60	10	17%
New Zealand	58	2	3%
Pakistan	36	4	11%
Philippines	114	7	4%
Republic of Korea	10	8	100%
Singapore	20	1	5%
Taiwan	46	42	96%
Thailand	39	29	72%
Timor-Leste	4	1	25%
Viet Nam	15	14	93%
Total	1374	568	





Key findings

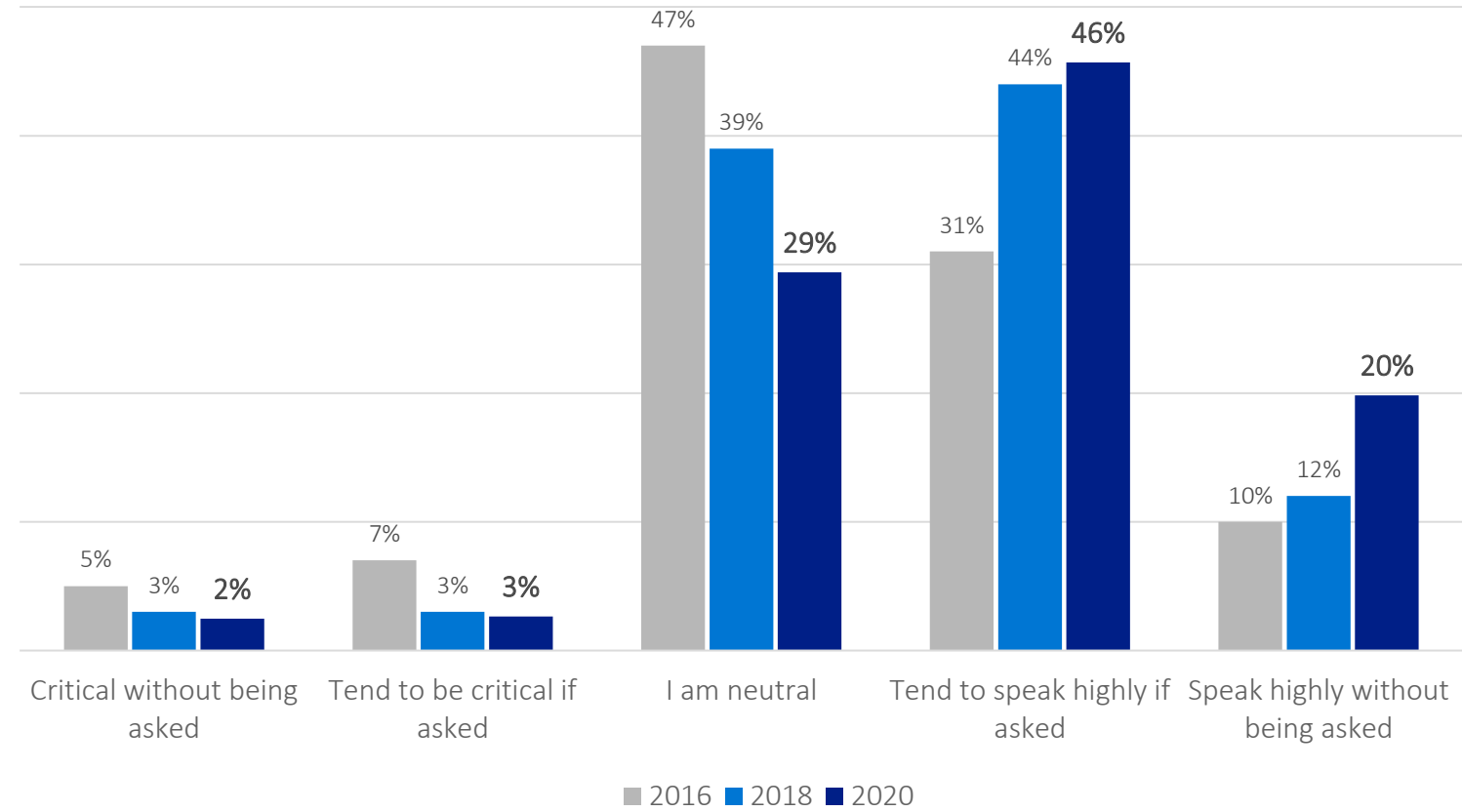
Key findings



Favourable endorsement of APNIC continues to rise

- Two thirds (66%) of respondents speak highly of APNIC, up from 56% in 2018 and 41% in 2016.
- Those who previously indicated ambivalence, now speak positively about APNIC.
- Very few speak negatively about the organisation.

Which of these phrases best describes the way you speak about APNIC to others?
(All respondents: 2016: n=1,167; 2018: n=1,241; 2020=1,624)

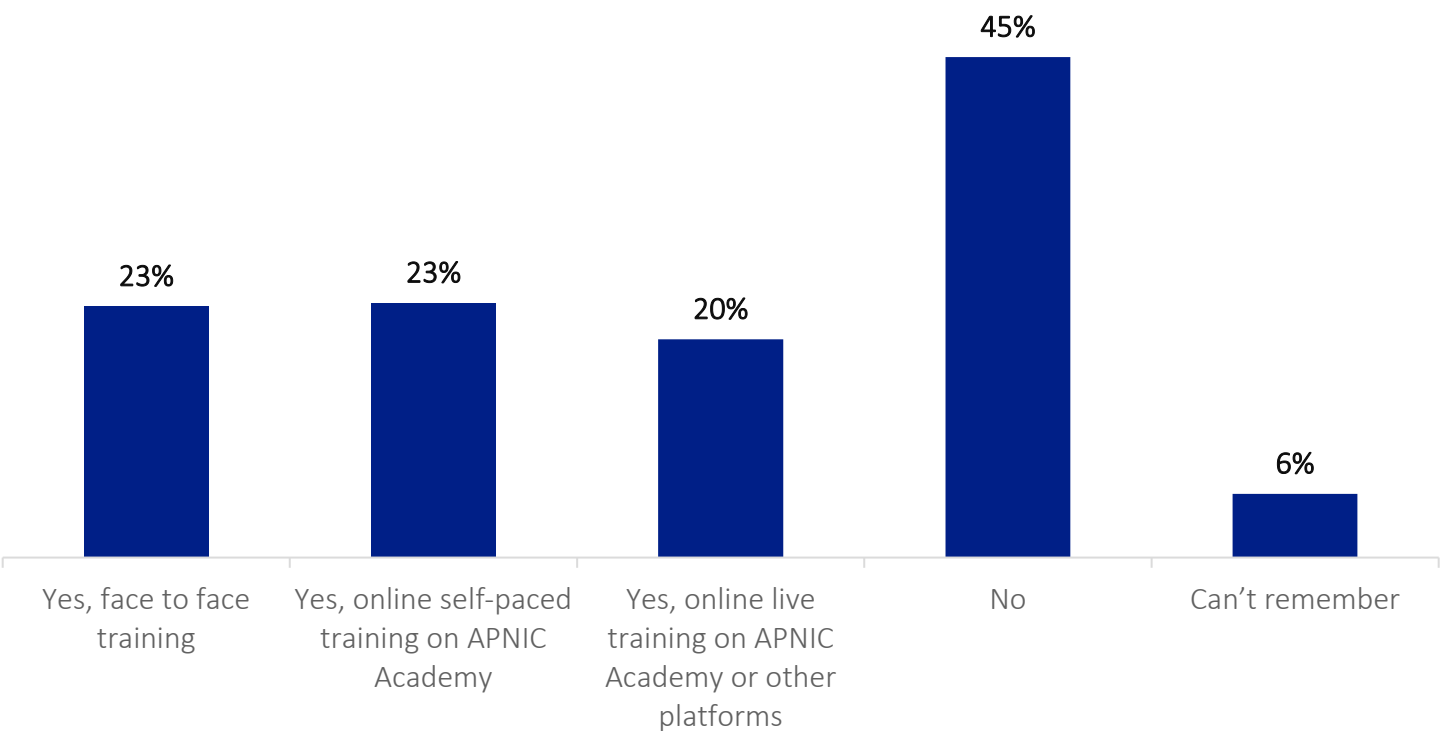


	Members	Stakeholders	East Asia	Oceania	SE Asia	South Asia	LDEs	Developing
Sample Size	903	338	337	251	259	356	294	672
Critical without being asked	3%	2%	2%	1%	3%	3%	3%	2%
Tend to be critical if asked	3%	3%	2%	1%	4%	2%	3%	3%
I am neutral	27%	35%	35%	28%	33%	25%	25%	31%
Tend to speak highly if asked	49%	39%	45%	45%	46%	46%	47%	45%
Speak highly without being asked	19%	21%	16%	24%	14%	23%	22%	19%
Mean Score	3.8	3.7	3.7	3.9	3.6	3.8	3.8	3.8
Standard Deviation	0.9	0.9	0.8	0.8	0.9	0.9	0.9	0.9

Key findings

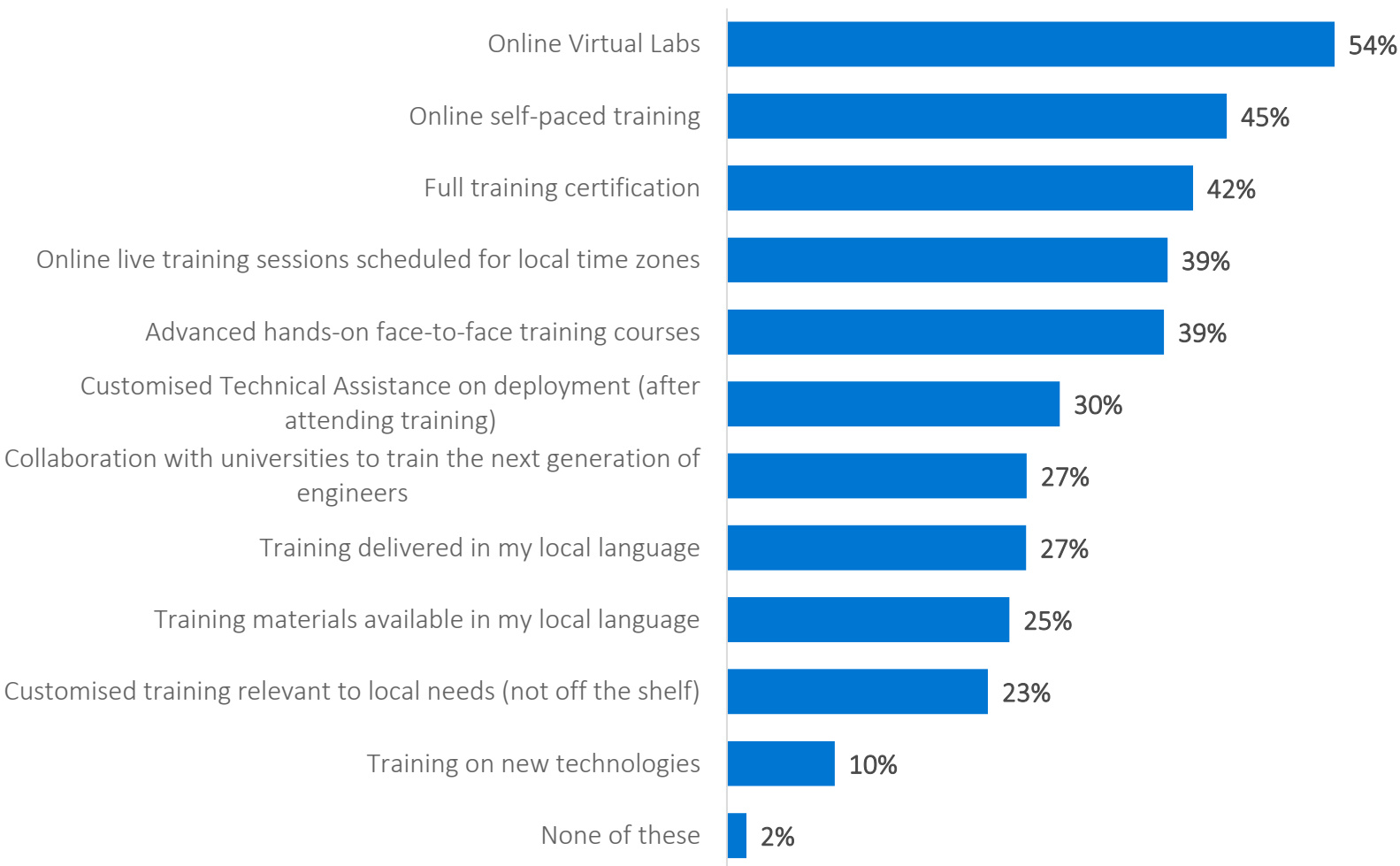


More respondents have attended APNIC training in the past two years



Have you completed any APNIC training in the past two years?
(All respondents: n=1,624)

- Up from 27% in 2018, 41% of survey respondents have attended APNIC training in the past two years
- Satisfaction has risen to 97%
- Online training offers the most value



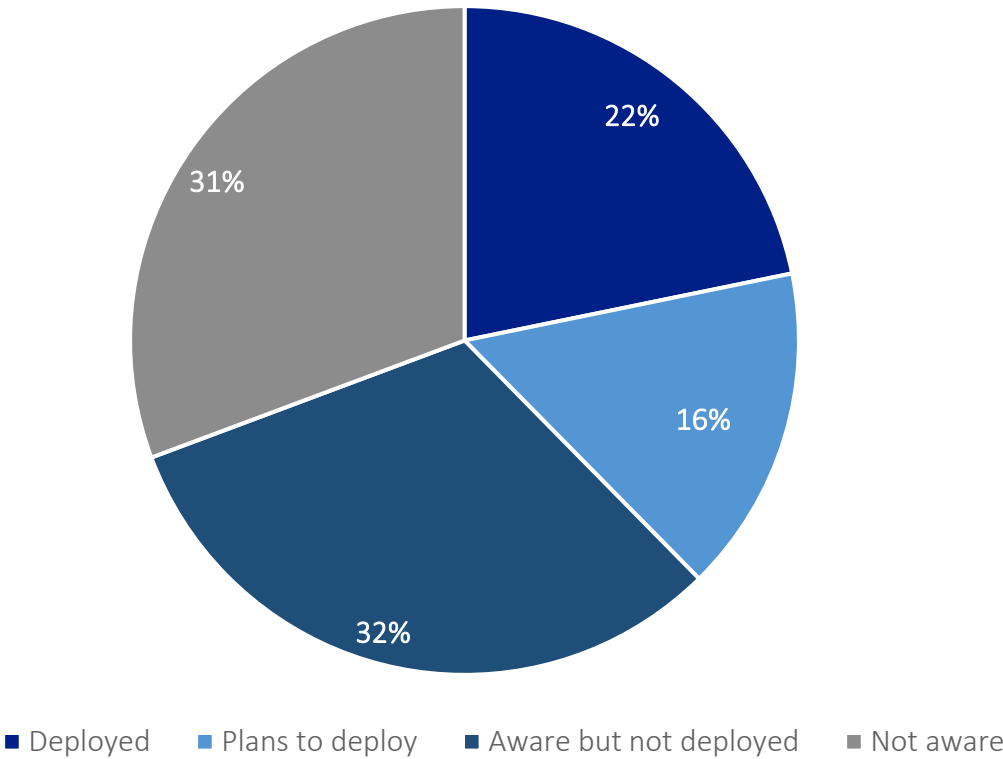
Which of the following training activities would be of MOST value to your organisation?
(All respondents Select up to 5. Base n=1,624; Total mentions: 5,872)

Key findings



Awareness and adoption of RPKI has improved

- Use of RPKI services has increased from 10% in 2018 to 27% in 2020.
- 70% of respondents were aware of RPKI, and 22% have already deployed it.
- Satisfaction with RPKI services is up 5%, with 94% providing a rating of above average, good or excellent



Please indicate the extent to which you are aware of, and have deployed, RPKI?

	Members	Stakeholders	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	1119	502	255	296	439	561	475	1147
I am not aware of this	27%	38%	27%	33%	31%	31%	30%	31%
I am aware of this, but have not deployed it	28%	39%	38%	36%	30%	27%	25%	34%
We have plans to deploy	17%	13%	11%	17%	17%	16%	15%	16%
This is deployed in our network	27%	10%	23%	14%	23%	26%	31%	19%

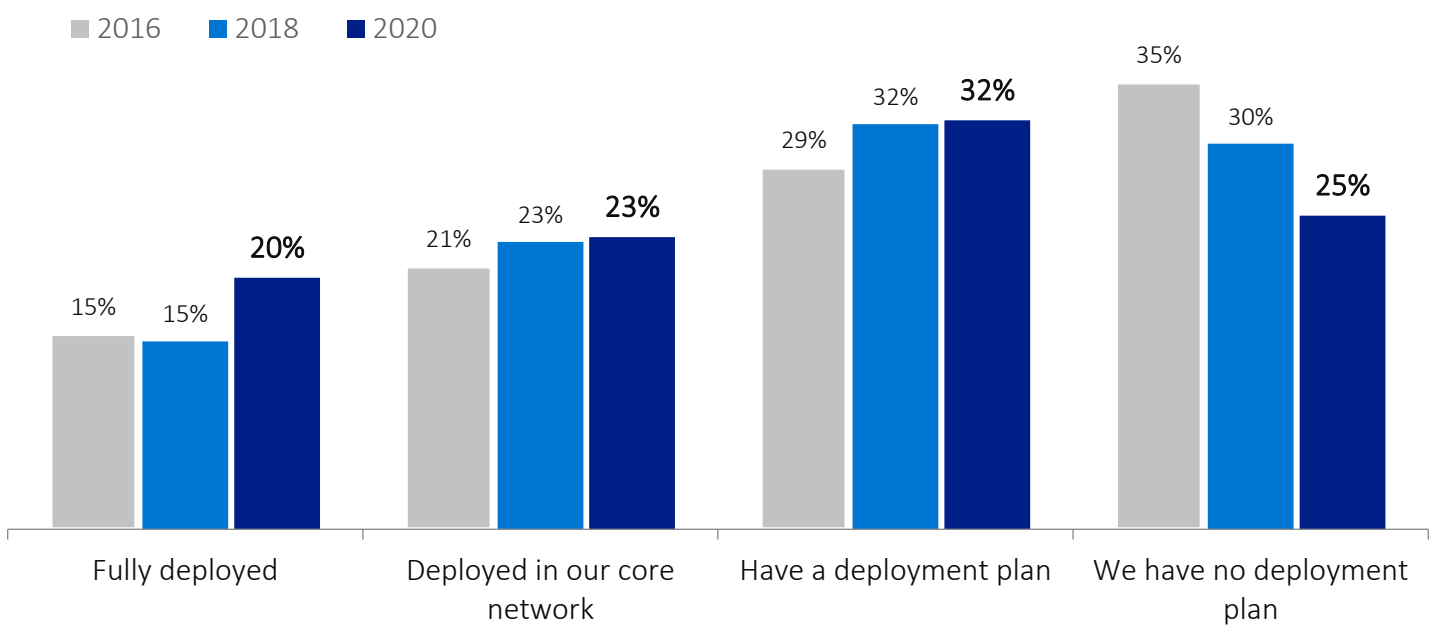
Significantly higher / lower than total

Key findings

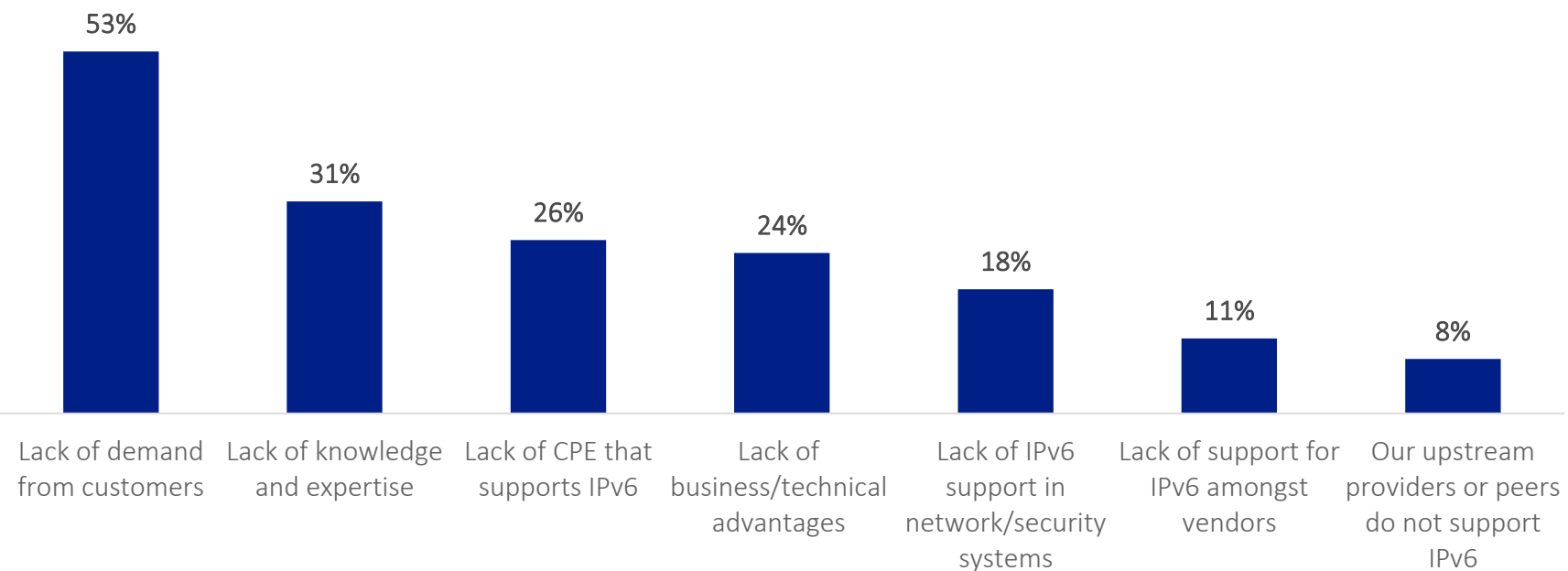


IPv6 Uptake

- Reported full deployment of IPv6 has risen to one in five respondent organisations.
- This is up from 15% in 2016 and 2018.
- At 36%, organisations in East Asia are significantly more likely to report that IPv6 is fully deployed than organisations in other sub-regions.

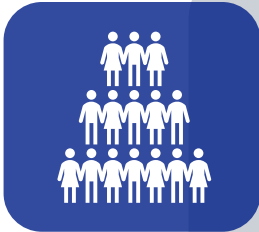


Has your organisation already deployed or are you ready for deployment of IPv6?



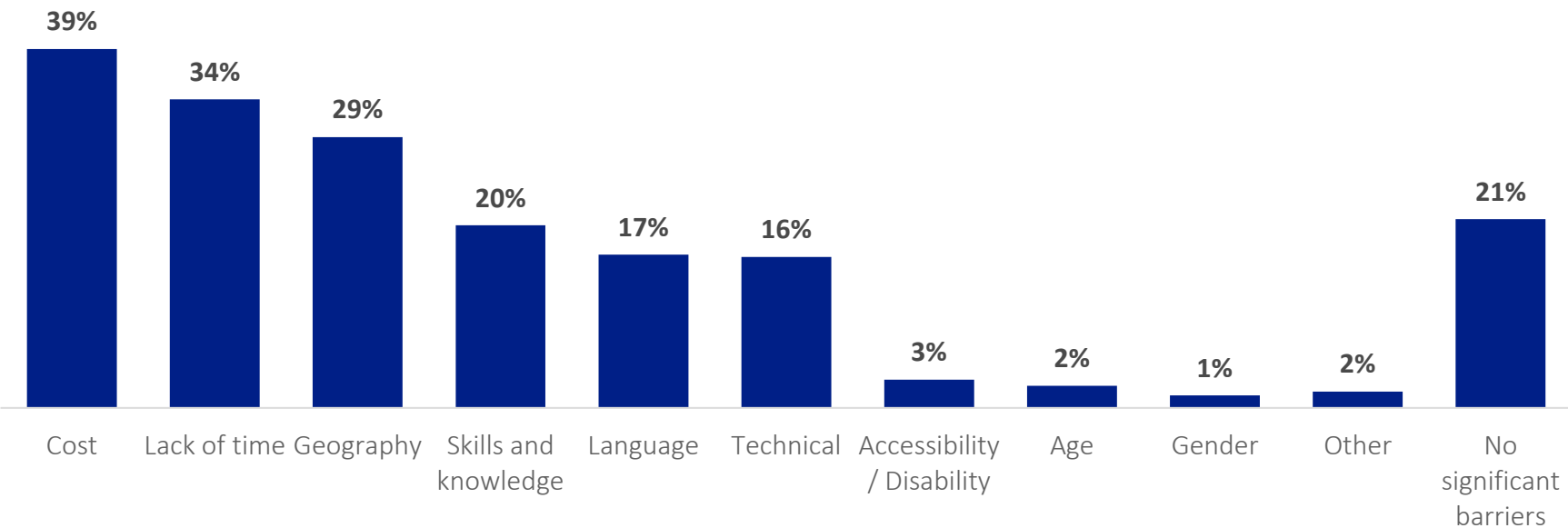
What is preventing IPv6 deployment in access or other networks?
(Members only. Select up to 2. n=262)

Key findings

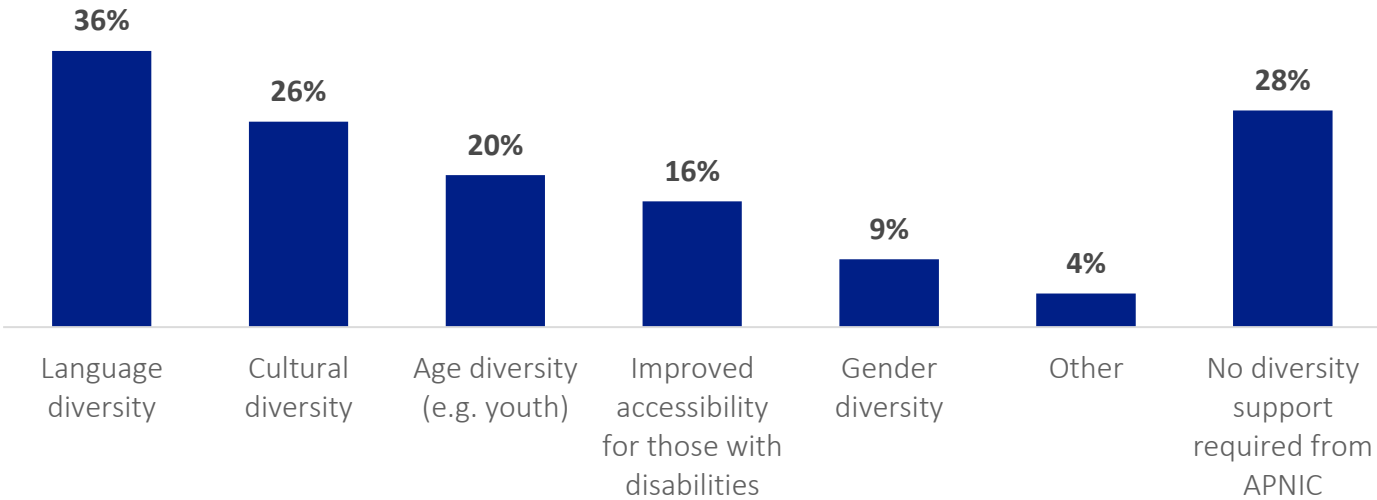


Encouraging participation

- Cost, time and geographic restrictions are the predominant barriers to greater participation
- 36% of respondents believe that additional focus on language support would encourage greater participation in APNIC activities
- Other suggestions to boost participation include promotion of activities to build awareness, enhanced remote access capabilities, and financial support



What do you think are the main barriers to participation in APNIC community activities?
(Select up to three (3) responses. Base n= 1,624, n=various)



Where should APNIC place additional focus to encourage greater diversity of participation in community activities?
(N= 1,624, n=various)

Key findings



Assistance with Internet development

	Members	Stakeholders	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	1120	504	255	296	439	562	476	1148
Supporting DNS root and TLD servers	38%	36%	32%	37%	38%	40%	37%	38%
Supporting IXPs	37%	31%	34%	36%	46%	27%	30%	37%
Internet industry associations	34%	38%	33%	33%	36%	36%	37%	34%
On CERTs	31%	39%	36%	44%	32%	28%	25%	36%
On NOGs	34%	28%	34%	32%	30%	34%	42%	28%
Supporting CDN caches	33%	26%	29%	20%	32%	41%	40%	27%
On IGFs or Schools of Internet Governance (SIGs)	16%	26%	18%	13%	19%	23%	22%	17%
On NREns	6%	10%	6%	2%	8%	11%	11%	6%
None of these	7%	5%	3%	10%	6%	6%	5%	7%

If additional resources were available for Internet development, through assistance for community organisations or supporting shared infrastructure, where do you want APNIC to focus its efforts?

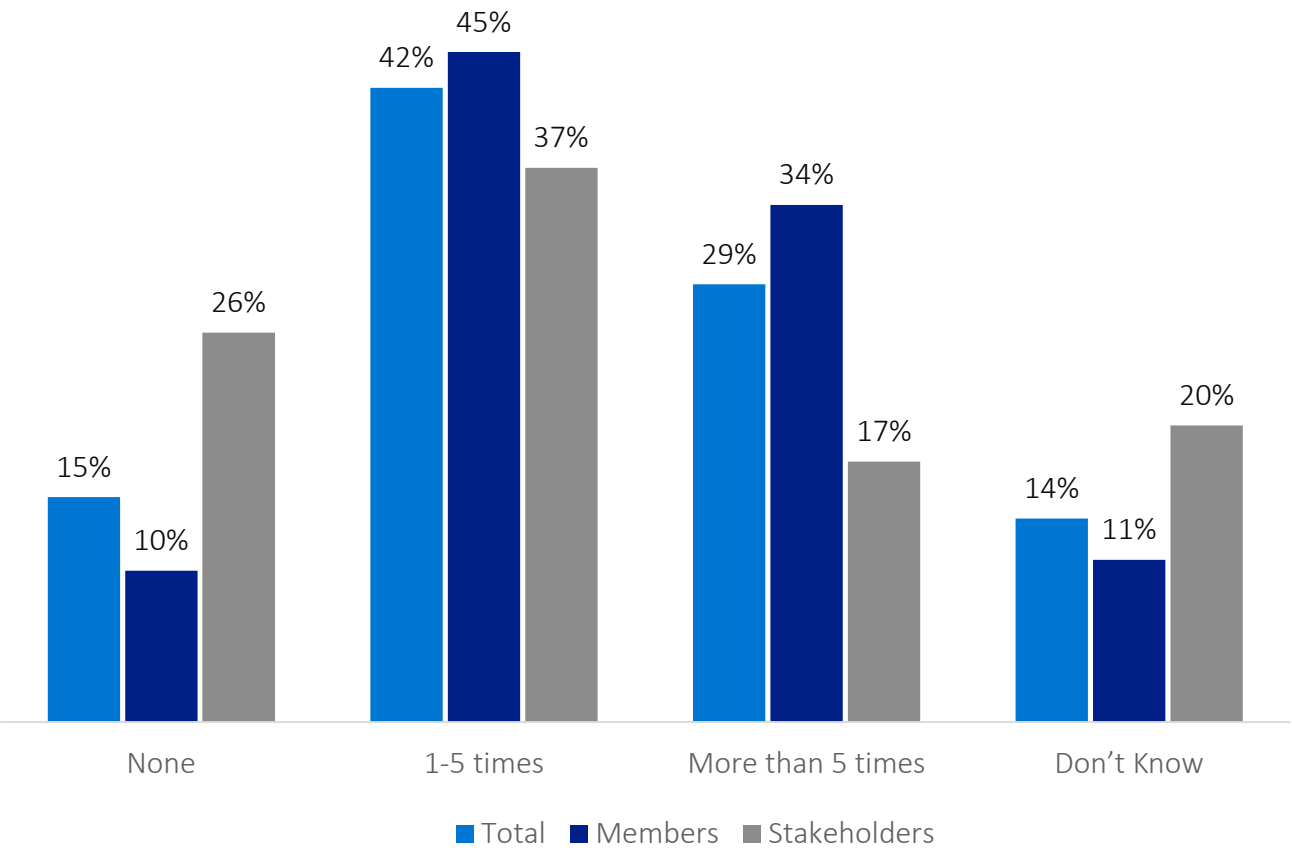
Significantly higher / lower than total

- Respondents want APNIC to focus on supporting DNS root and TLD servers
- Opinions were divided about where APNIC should focus its efforts in Internet development.
- APNIC Members, LDEs and those in South Asia want a focus on supporting IXPs, NOGs and CDN caches
- Stakeholders, developed and developing economies and those in Oceania would prefer a focus on CERTs.

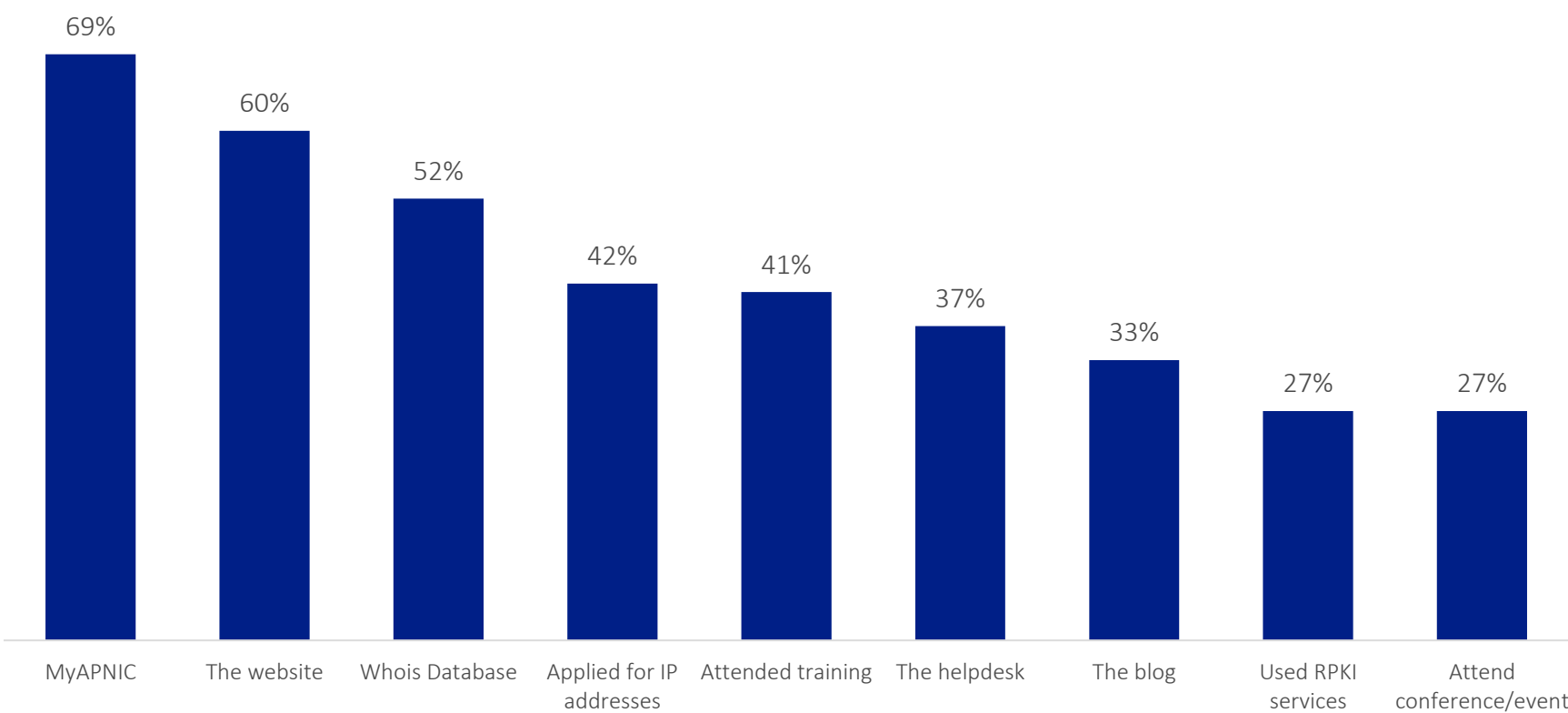


Usage and Satisfaction

Contact frequency



Most used services



Over the last two years, which of the following APNIC products, services or initiatives have you used, participated in or accessed:

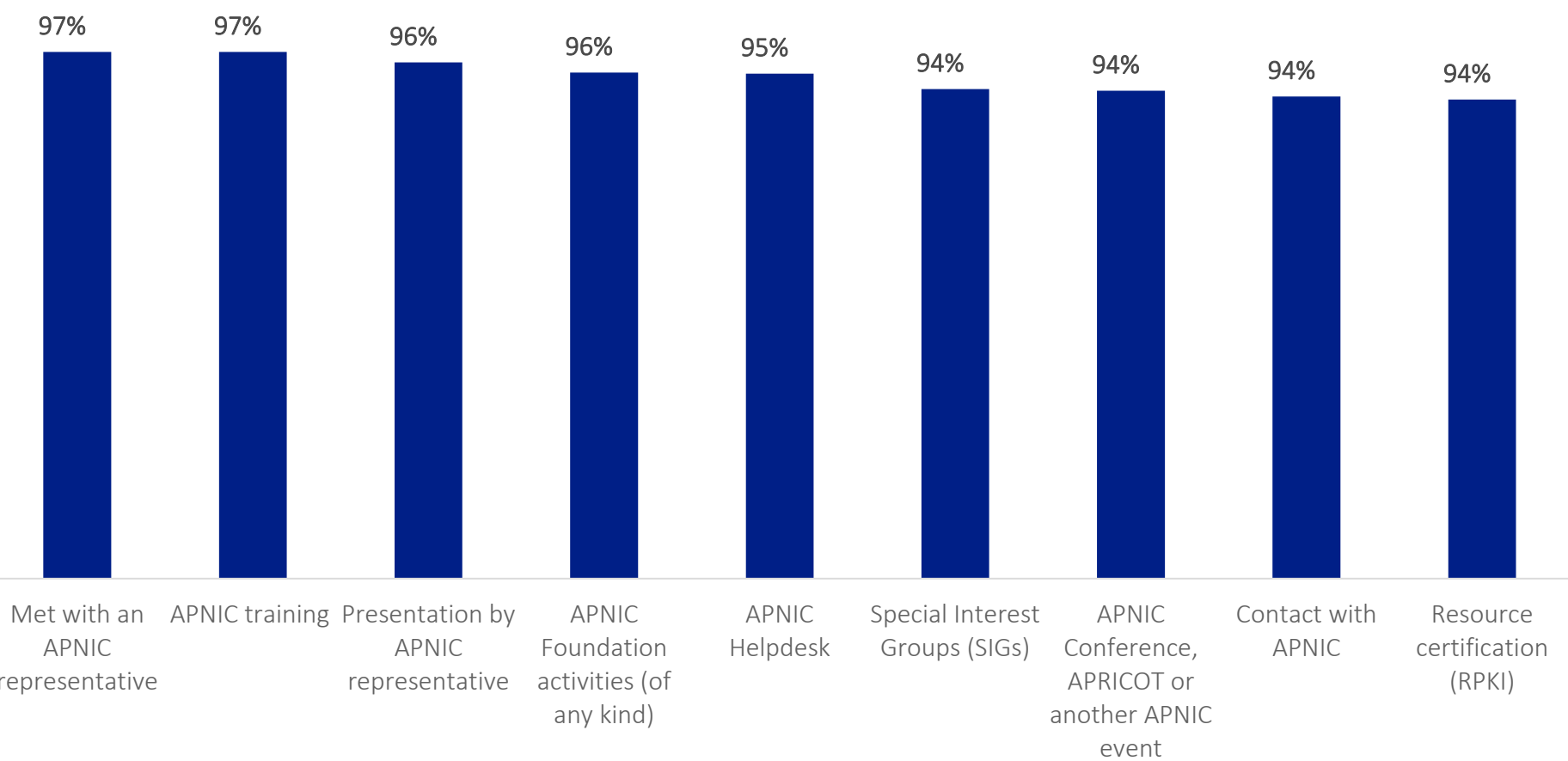
	2016	2018	2020	East Asia	Oceania	SE Asia	South Asia	LDEs	Others
Sample size	1175	1241	1624	255	296	438	561	475	1146
None	12%	21%	15%	15%	7%	17%	18%	17%	14%
1-5 times	49%	43%	42%	47%	52%	41%	36%	36%	45%
More than 5 times	28%	24%	29%	29%	32%	26%	30%	29%	29%
Don't Know	11%	12%	14%	9%	8%	16%	17%	18%	12%

Significantly higher / lower than total

How many times have you used an APNIC service, contacted or interacted with APNIC in the last 2 years?

Top Rated APNIC Services

- Respondents are most satisfied with the personal interactions with APNIC
- Satisfaction with training has improved and is very high
- Although few have experienced the APNIC Foundation activities those who have rate their involvement highly

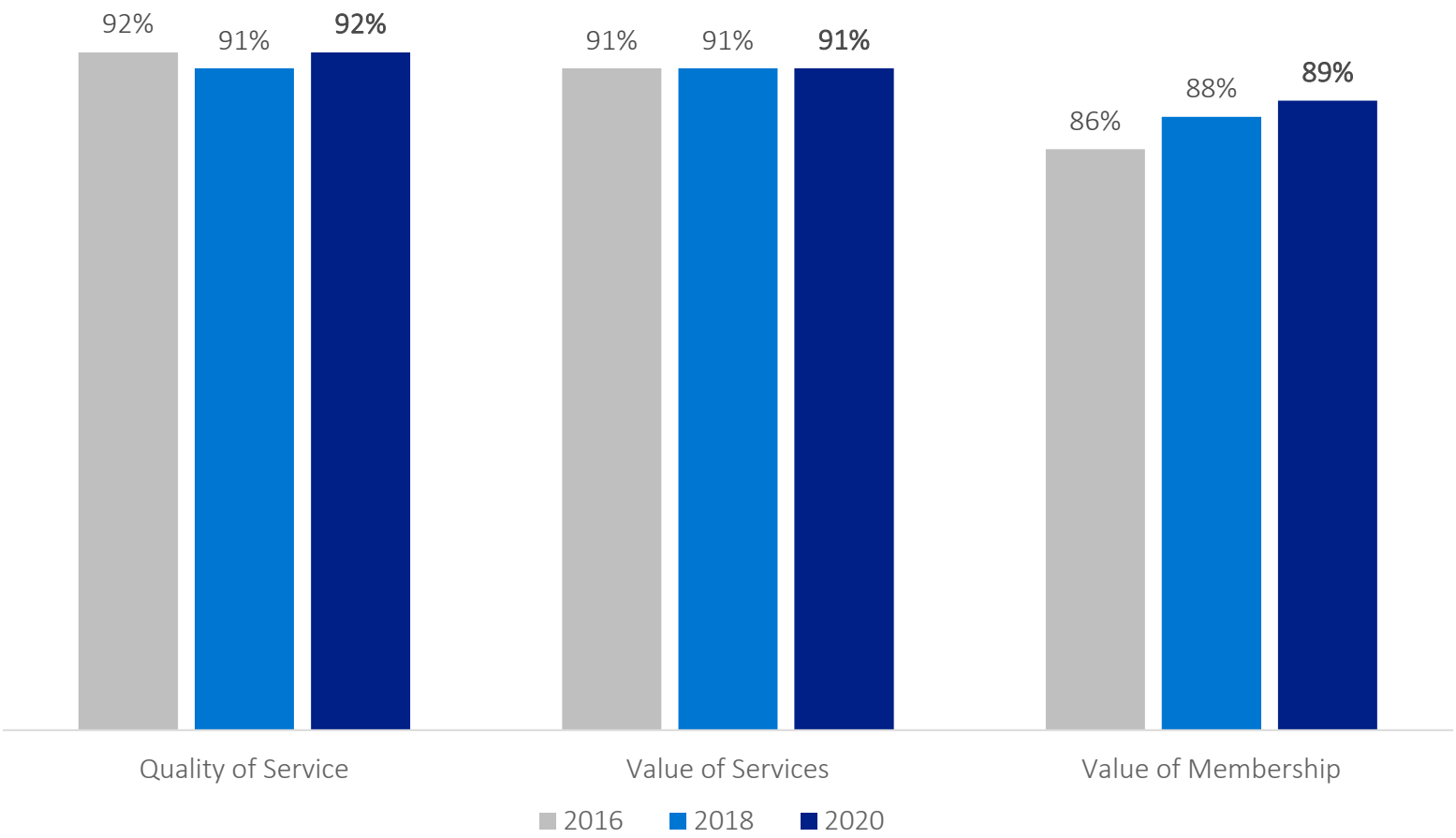


Thinking about the APNIC services and activities you have used or undertaken, how would you rate your experience?

	Top 3 Box Satisfaction Scores			
	2016	2018	2020	Change
Sample	1175	1241	1624	
Met with an APNIC representative	92%	97%	97%	-
APNIC training (face-to-face or online)	91%	94%	97%	+3%
Presentation by APNIC representative	90%	97%	96%	-1%
APNIC Foundation activities (of any kind)	N/A	N/A	96%	-
APNIC Helpdesk	91%	93%	95%	+2%
Special Interest Groups (SIGs)	84%	97%	94%	-3%
APNIC Conference, APRICOT or another APNIC event	92%	98%	94%	-4%
Contact with APNIC	80%	90%	94%	+4%
Resource certification (RPKI)	85%	89%	94%	+5%
APNIC reverse DNS service (as an address holder)	92%	91%	93%	+2%
APNIC website	86%	90%	93%	+3%
APNIC Whois database	92%	91%	93%	+2%
MyAPNIC	90%	92%	93%	+1%
APNIC NetOX	N/A	N/A	93%	-
APNIC Blog	81%	90%	93%	+3%
IPv4 address transfer (as source or recipient)	83%	86%	92%	+6%
APNIC Policy Development Process	85%	95%	92%	-3%
IP address allocation	92%	89%	90%	+1%
IP address or AS number resource application	93%	90%	89%	-1%
APNIC Internet Directory	N/A	N/A	89%	-
APNIC’s EC election	N/A	N/A	89%	-
APNIC Annual Report	N/A	N/A	87%	-
APNIC RDAP service	N/A	N/A	86%	-

Significantly higher / lower than total

Overall satisfaction – APNIC Members



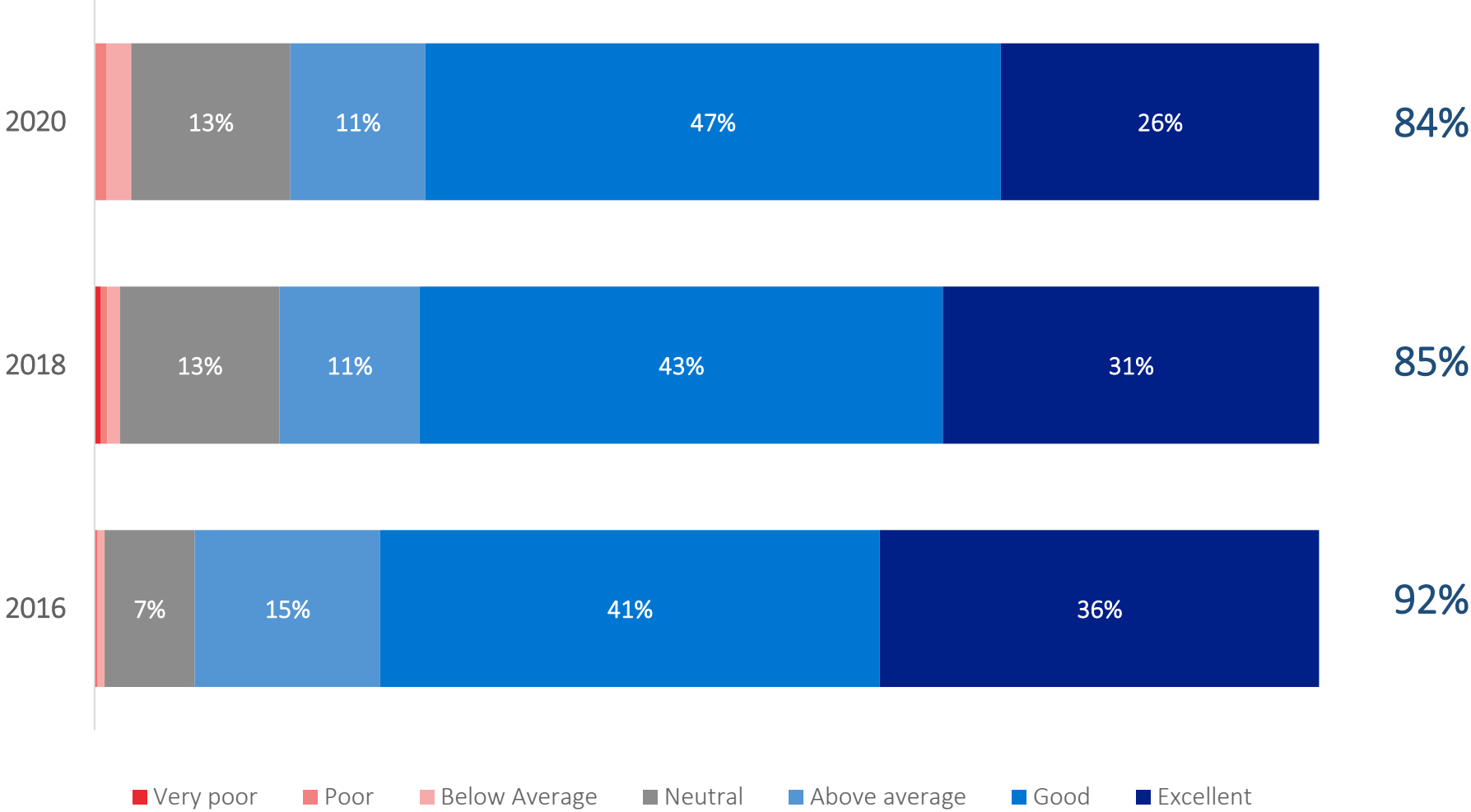
- A majority of respondents rated the quality of service delivery positively, with 92% rating the quality of services at a five or higher
- 91% also provided a rating higher than neutral for the value of APNIC services.
- Slightly fewer (89%) rated the overall value of APNIC Membership as above average or better.
- The proportion of respondents rating the quality of APNIC services as ‘Excellent’ increased to 39%, up from 35% in 2018
- Excellent ratings for service value were also up slightly, to 40% of Members
- As in previous surveys, respondents from LDEs and South Asia are significantly more satisfied with service quality and value, and the value of membership

	Total	East Asia	Oceania	SE Asia	South Asia	LDE	Others
Sample Size	1119	165	217	296	397	353	766
Quality of Service	92%	88%	89%	93%	97%	97%	90%
Value of Services	91%	90%	84%	93%	96%	97%	89%
Value of Membership	89%	92%	79%	89%	96%	95%	86%

Thinking about APNIC overall, how would you rate:
Members only: n=1,119

Significantly higher / lower than total

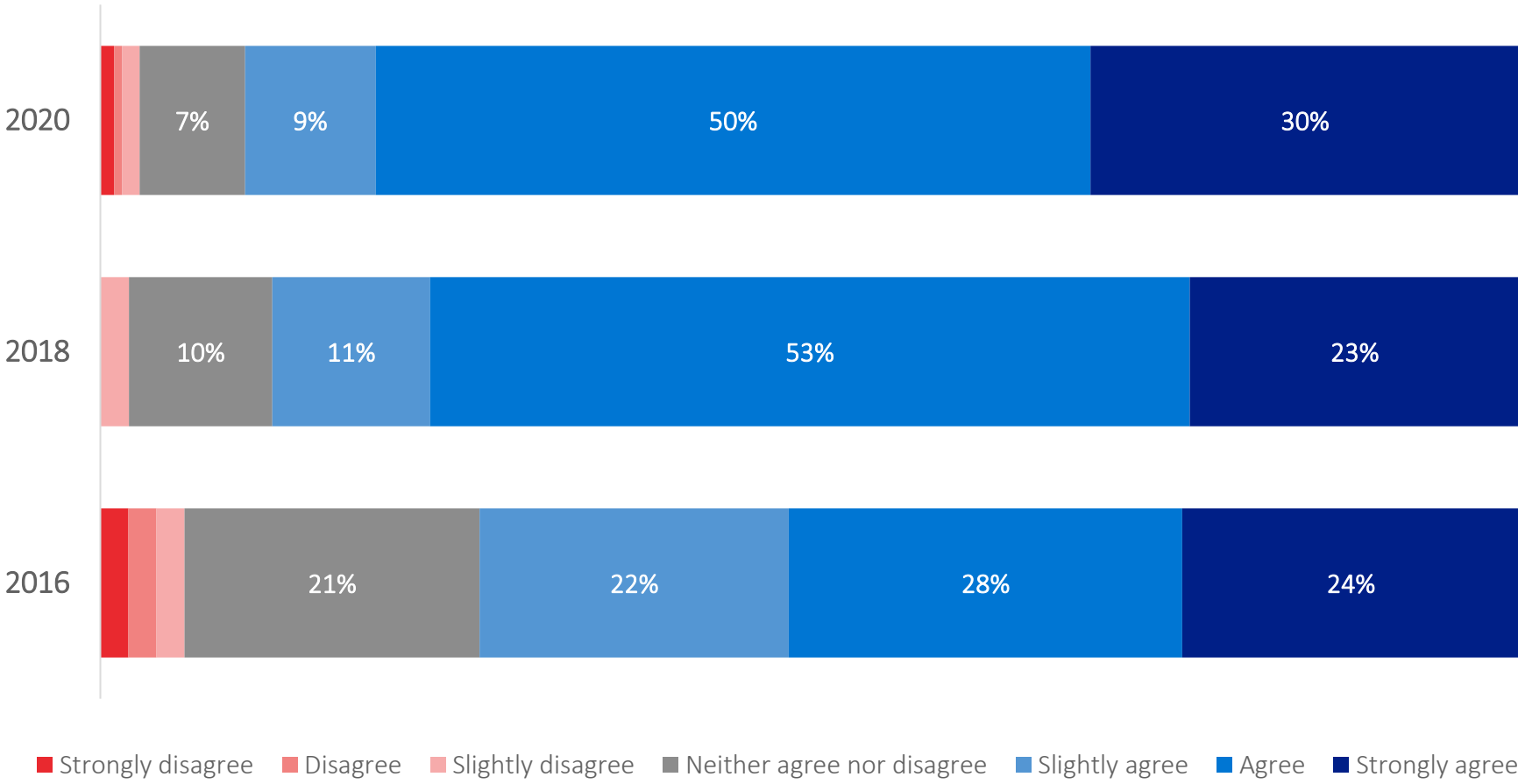
Overall satisfaction – Stakeholders



Overall, how would you rate your experience dealing with APNIC?
Stakeholders only n=502

- Although the overall positive rating remains steady at 84%, fewer Stakeholders provided an ‘Excellent’ rating this year
- This supports Stakeholder endorsement of APNIC, where over a third (35%) provided a neutral rating
- There appear to be some correlations between language and training, and overall satisfaction:
 - Those who understand some or little English are more likely to provide satisfaction ratings of average or below
 - Those who indicate they want training and training materials delivered in their local language are also more likely to provide lower ratings
- Suggest a free text question is added in the next survey wave to ask why respondents provided their rating

Governance



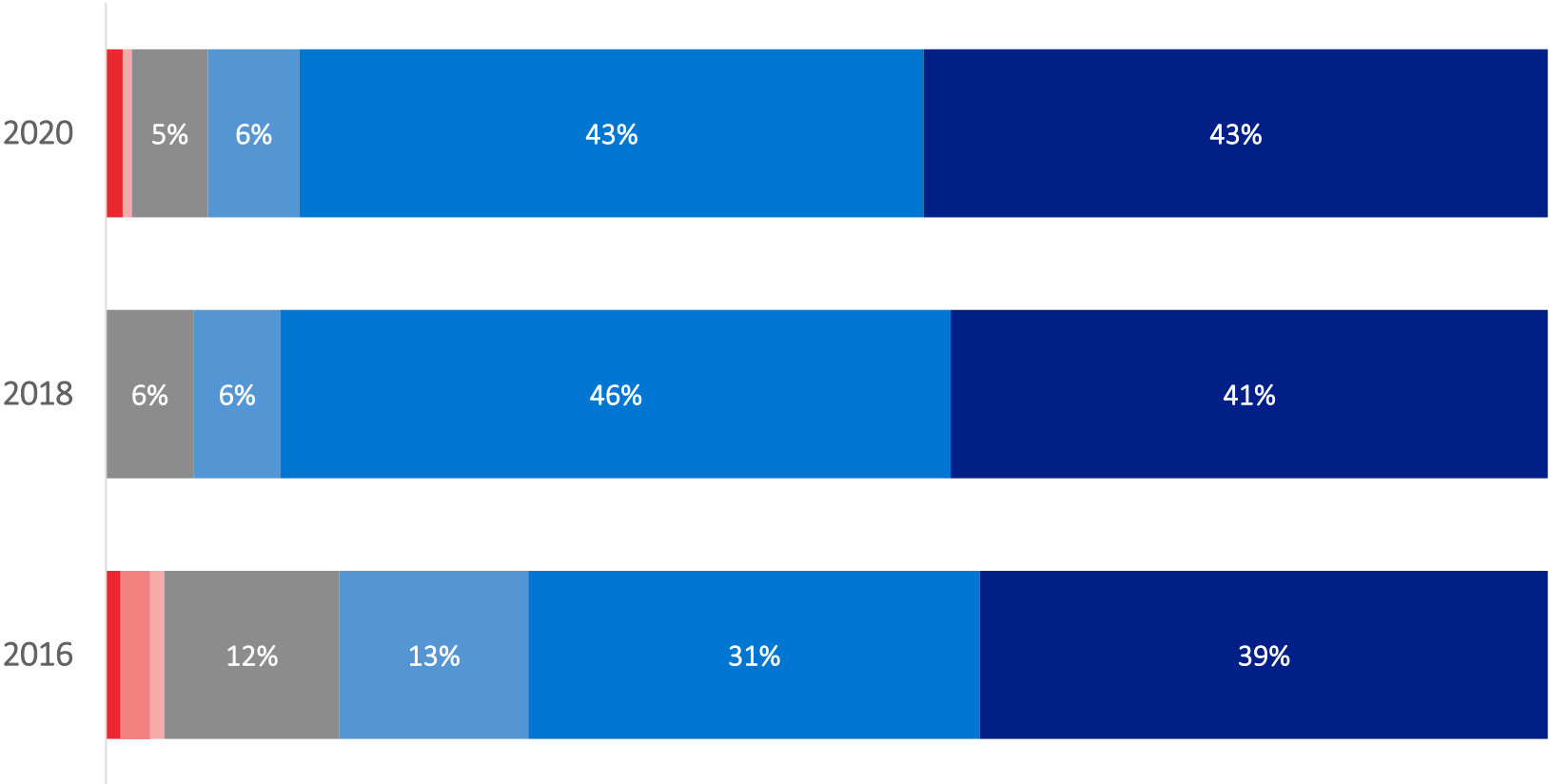
- The vast majority of respondents agree that APNIC is transparent in its activities
- Up from previous years, 30% strongly agree with this statement

	Total	East Asia	Oceania	SE Asia	South Asia	LDE	Others
Sample Size	1119	165	217	296	397	353	766
Top 3 Satisfaction	89%	87%	85%	90%	94%	94%	88%

Significantly higher / lower than total

Thinking about your membership of APNIC, how much do you AGREE that APNIC is sufficiently transparent in its activities?
(Members only. 2016 n=733; 2018 n=903, 2020 n=1,118)

Respect



Strongly disagree Disagree Slightly disagree Neither agree nor disagree Slightly agree Agree Strongly agree

- Confirming individual interviews, APNIC is held in high esteem amongst Members
- 92% agree APNIC is respected in the community, with 43% strongly agreeing

	Total	East Asia	Oceania	SE Asia	South Asia	LDE	Others
Sample Size	1119	165	217	296	397	353	766
Top 3 Satisfaction	92%	90%	91%	93%	95%	95%	92%

Significantly higher / lower than total

Thinking about your membership of APNIC, how much do you AGREE that APNIC is respected in the Internet community?
(Members only. 2016 n=733; 2018 n=903, 2020 n = 1,118)



Challenges



In your own words, what is the main challenge for you / your organisation in providing Internet-related products, services & activities?

“The internet cost in the Pacific Island countries is still very high and this is a major challenge in the Pacific.” (Oceania)

“Security is major challenge, nowadays. APNIC should focus on this aspect for their members in terms of training, knowledge sharing & best practices.” (South Asia)

“Main challenge is as a developing country Sri Lanka does not have sufficient telecommunications infrastructure specially in rural areas.” (South Asia)

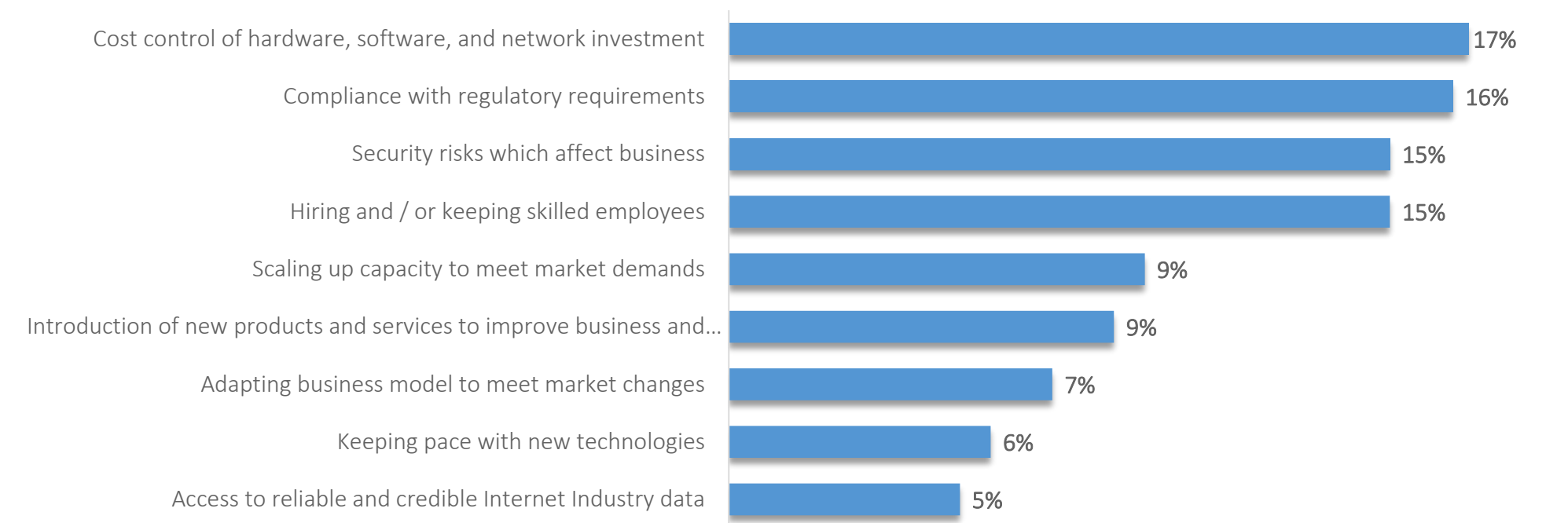
“Cost is the main challenge when it comes to Internet related products” (South Asia)

“Balancing rapid growth in usage and network expansion costs” (East Asia)

“High cost of internet connectivity and high cost of cyber security appliances.”

South Asia

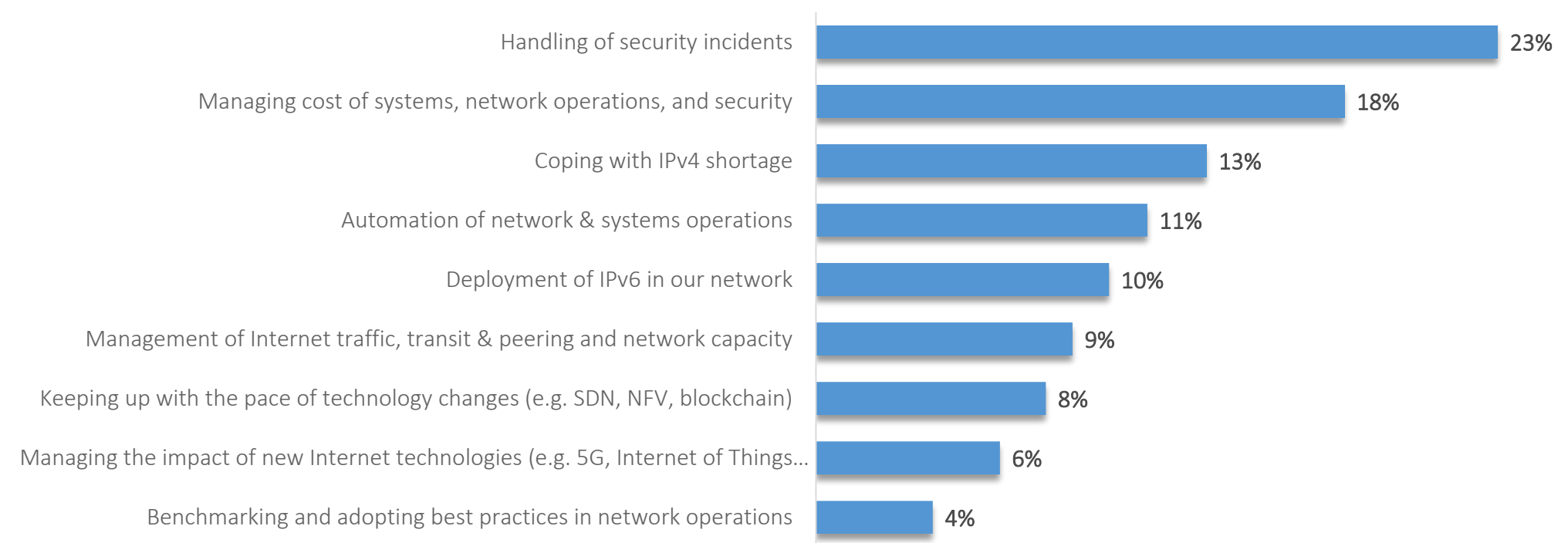
Strategic challenges



- Cost, regulatory compliance, security risks and the skills and knowledge of employees are the issues that Executives are most concerned about
- Nearly half (48%) of Executives included cost control in their top 3 challenges, however those in East Asia (34%) are less likely to indicate this is an issue
- Compliance is the main issue for respondents in South East Asia (20%) and South Asia (22%)
- While no Executives in East Asia ranked security risks as their number one challenge, 45% ranked it as their 2nd or 3rd challenge.
- Maintaining a skilled workforce is a challenge, particularly in East Asia (24%) and Oceania (18%)

	Member	Stakeholder	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	230	56	29	68	64	118	85	201
Cost control of hardware, software, and network investment	18%	13%	10%	19%	19%	17%	19%	16%
Compliance with regulatory requirements	15%	23%	3%	9%	20%	22%	19%	15%
Hiring and / or keeping skilled employees	16%	13%	24%	18%	13%	11%	11%	17%
Security risks which affect business	14%	16%	0%	25%	6%	17%	16%	14%
Scaling up capacity to meet market demands	10%	5%	14%	9%	11%	8%	7%	10%
Introduction of new products and services to improve business and stay competitive	10%	5%	14%	9%	14%	5%	7%	9%
Adapting business model to meet market changes	7%	11%	21%	9%	5%	4%	4%	9%
Keeping pace with new technologies	6%	5%	7%	1%	5%	9%	11%	4%
Access to reliable and credible Internet Industry data	4%	9%	7%	1%	8%	6%	7%	4%

Operational challenges



	Member	Stakeholder	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	1087	486	252	295	425	531	444	1129
Handling of security incidents	21%	25%	26%	20%	21%	25%	27%	21%
Managing cost of systems, network operations, security	17%	19%	15%	26%	20%	13%	14%	19%
Coping with IPv4 shortage	16%	7%	19%	8%	12%	14%	12%	13%
Automation of network & systems operations	11%	10%	6%	12%	11%	11%	11%	11%
Deployment of IPv6 in our network	9%	10%	8%	6%	10%	12%	12%	9%
Management of Internet traffic, transit & peering, network capacity	9%	7%	8%	9%	8%	9%	9%	8%
Keeping up with the pace of technology changes	7%	10%	11%	6%	8%	7%	7%	8%
Managing the impact of new Internet technologies	5%	8%	7%	5%	6%	6%	5%	6%
Benchmarking / best practices in network operations	4%	4%	2%	7%	5%	2%	2%	4%

- Overall, the top three operational challenges remain the same as prior surveys
- Handling security threats is a challenge across all sub-regions, and at 27%, particularly for LDEs
- Managing the costs of systems, network operations and security is a bigger issue for those in Oceania and South East Asia
- A new challenge was added this year, automation of network and systems operations
- This is an issue for 11% of respondents, although fewer in East Asia (6%) rank this as a challenge

Thinking about your Internet-related services, products or activities, what are the MAIN operational challenges facing your organisation? (Ranking Question. All Respondents asked to rank at least top 3 items, n=1,624) Significance tests not performed on ranking questions



How might APNIC best assist you or others with these challenges?

“Providing capacity building and other assistive training at a very low cost or no cost for the organizations that struggle to adapt in rapidly changing environments of technologies”. (East Asia)

“Provide more face to face training opportunities for the Pacific Island Countries” (Oceania)

“Provide more training and inform best practices in the implementation of new technologies.” (South East Asia)

“Provide more resources for network operators and smaller organization who need to respond to security incidents” (East Asia)

“APNIC is doing fantastic job by organizing technical trainings and workshops on latest technologies and they should organize more so people can more benefit.” (South Asia)

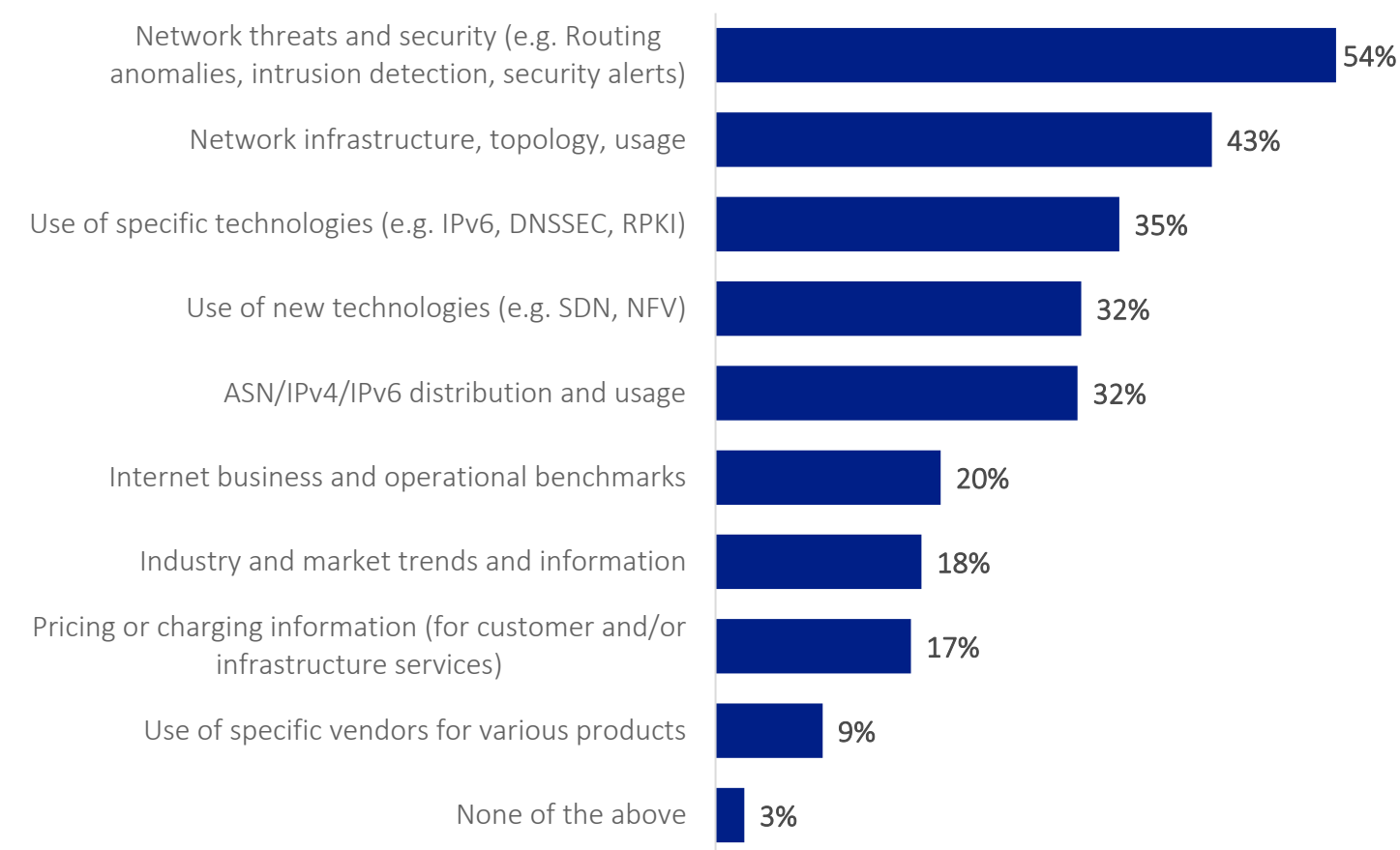
Overwhelmingly, the provision of education and training is the best support APNIC can provide to overcome respondents’ challenges.



Information & Internet Development

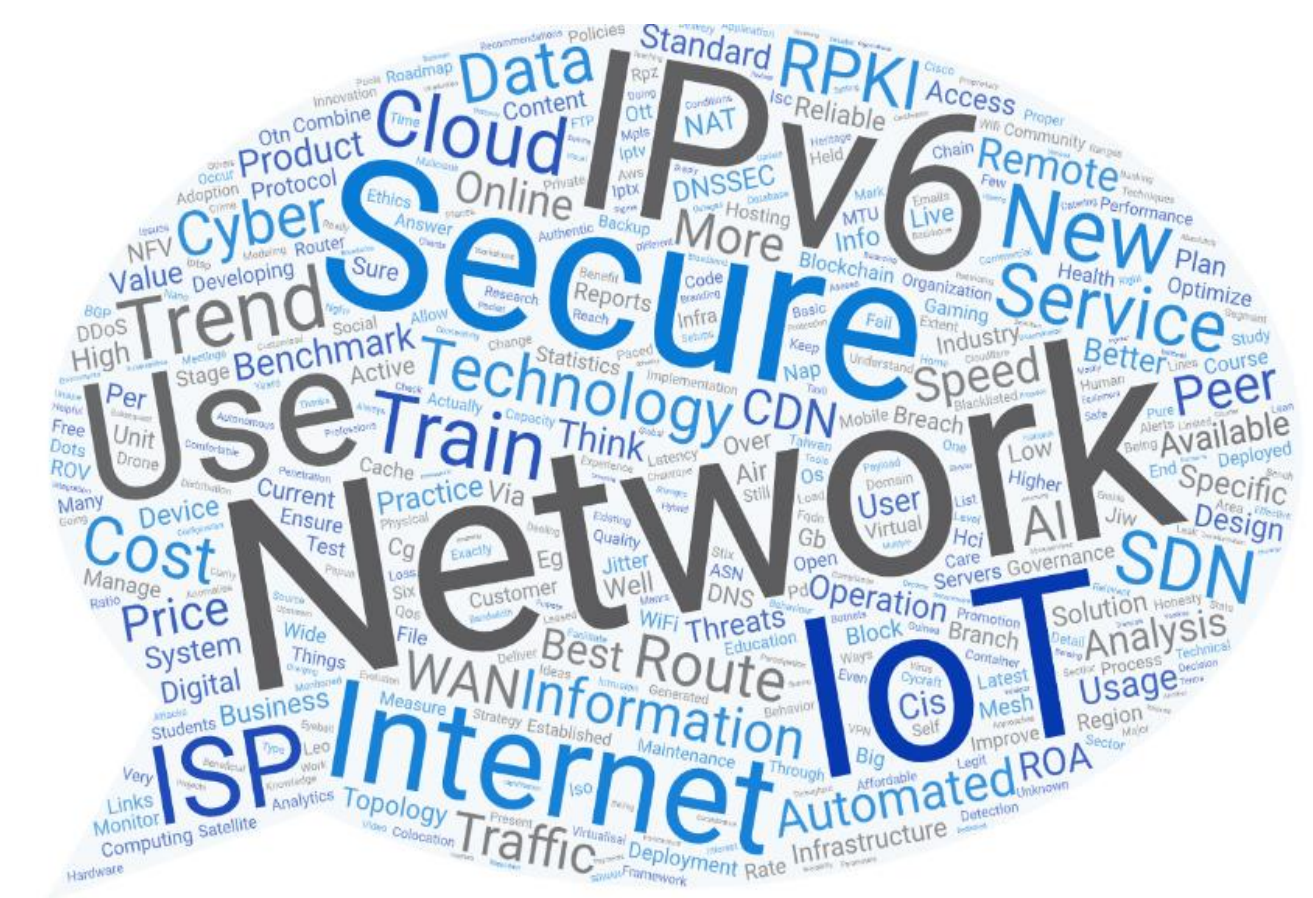
Trend & benchmarking data

- As with the 2018 survey, and reflecting the operational challenges, over half of respondents want trend and benchmark data about network threats and security
- Reflecting the interview consultations, data about network infrastructure, topology and usage is also useful
- Use of specific and new technologies, and ASN/IPv4/IPv6 distribution and usage is of value to around a third of respondents.



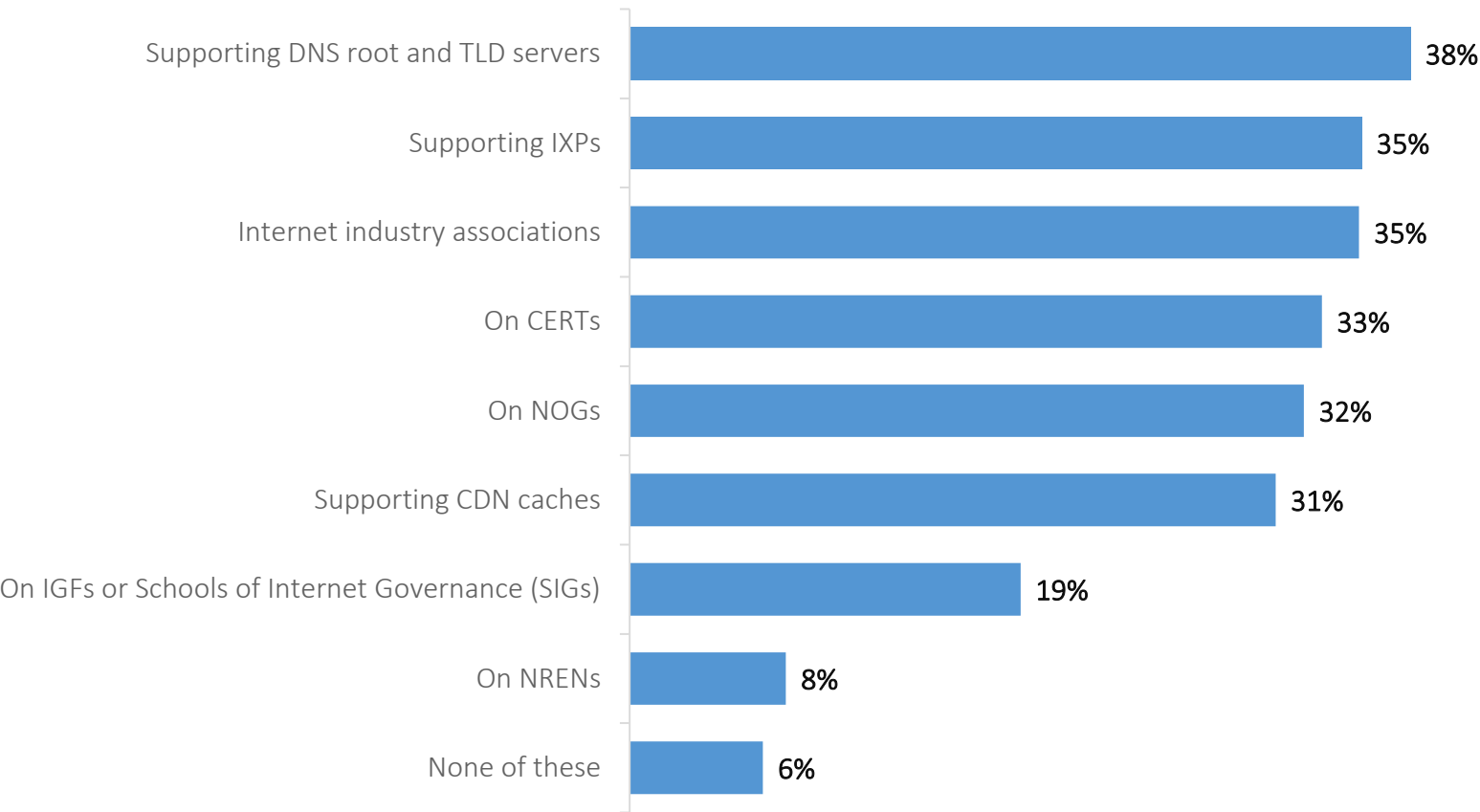
	Members	Stakeholders	East Asia	Oceania	SE Asia	South Asia	LDEs	Other
Sample size	1120	504	255	296	439	562	476	1148
Network threats and security	54%	54%	56%	68%	49%	51%	54%	54%
Network infrastructure, topology, usage	43%	44%	39%	46%	42%	46%	48%	41%
Use of specific technologies (e.g. IPv6, DNSSEC, RPKI)	36%	35%	40%	40%	33%	31%	29%	38%
Use of new technologies (e.g. SDN, NFV)	33%	31%	37%	28%	33%	31%	30%	33%
ASN/IPv4/IPv6 distribution and usage	32%	30%	29%	17%	32%	40%	36%	30%
Internet business and operational benchmarks	19%	21%	15%	14%	23%	23%	25%	17%
Industry and market trends and information	18%	18%	26%	17%	18%	15%	12%	21%
Pricing or charging information	16%	18%	16%	16%	20%	17%	20%	16%
Use of specific vendors for various products	9%	10%	5%	10%	10%	11%	11%	9%
None of the above	3%	2%	1%	4%	3%	2%	1%	3%

“Network performance, best practice on network configuration and security” East Asia



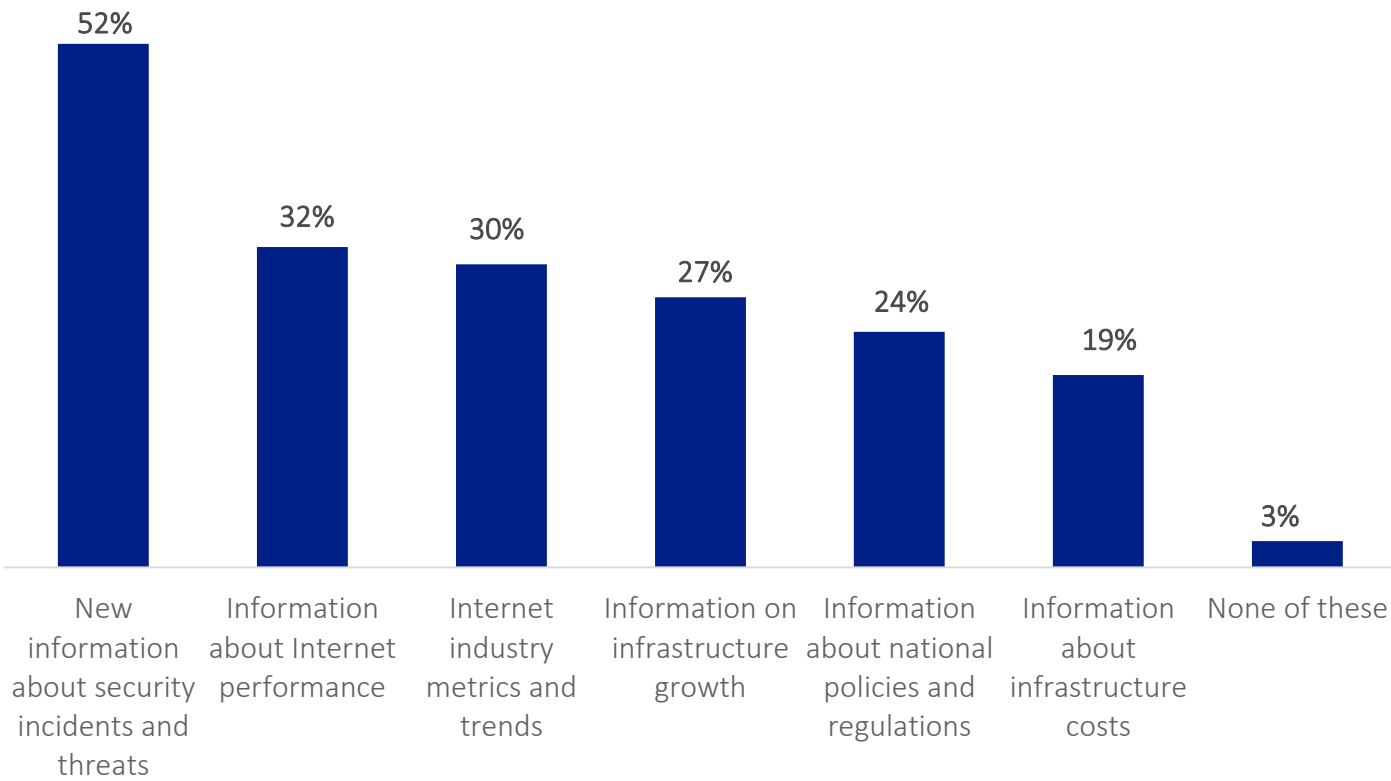
Internet development

- Reflecting the diversity of the Internet community, responses are evenly distributed across six suggestions for APNIC to focus on
- Supporting DNS root and TLD servers is the area most want APNIC to focus on
- LDEs want a focus on NOGs, while other economies favour attention on CERTs



If additional resources were available for Internet development, through assistance for community organisations or supporting shared infrastructure, where do you want APNIC to focus its efforts?
(All respondents. Select up to 3. Base n=1,624; Total mentions: 3,850)

- Reflecting the operational challenges faced with security, over half of respondents would like new information about security incidents and threats
- Those in Oceania are more likely to believe that new information about security would be beneficial than other sub-regions



If additional resources were available for Internet development in information services, what would provide your organisation with the most benefit?
(All respondents. Select up to 2. Base n=1,624; Total mentions: 3,043)



Recommendations

Areas for focus

Training and Education

Training in all formats is the best way APNIC can assist the Internet community with their issues. However, reflecting the diversity of the region, there are distinct differences in the types of training activities that would provide the most value.

- Online virtual labs and online self-paced learning are the activities that would provide the most value, although self-paced training is less appealing to those in East Asia, South Asia and LDEs
- Full training certification is also popular, particularly in South East and South Asia
- Training and training materials delivered in the local language would provide the most value to those in East Asia, South East Asia and the LDEs
- Online, live training sessions scheduled for local time zones is also of value to all respondents except for those in East Asia

RPKI, ROA and ROV awareness and education

Although awareness and use of RPKI has improved over the past two years, nearly a third of respondents remain unaware of the technology for routing security. Over a third are unaware of ROA, and half have not heard of ROV.

- Overwhelmingly, online training would help respondents learn more about, and implement these technologies
- Technical Assistance would also help, as would case studies and face-to-face training
- Respondents also commented that APNIC needs to continue to promote and champion RPKI, ROA and ROV adoption across the region.

Areas for focus

Network Security

Network security is the biggest operational challenge for all respondents, regardless of Member type, economy or sub-region

- DDoS attacks are the biggest issue for those in East Asia, South Asia and LDEs. Phishing, spam, ransomware and malware are more of a concern for those in Oceania
- More security-focussed training courses are the best form of assistance for all respondents, along with collaboration with other technical security organisations to share information and best practice.

IPv4 Scarcity

Deploying IPv6, the cost to buy, and finding available, IPv4 addresses are the main issues arising from the scarcity of IPv4 resources

There is consensus across all regions and economies for APNIC to reclaim unused IPv4 resources which have no existing (or contactable) account holder.

- Support for APNIC to analyse and identify unused addresses is also high in all sub-regions and economies except Oceania
- Attempting to recover unused IPv4 resources from identified address holders is also popular
- There is less support this year for APNIC to actively serve as an IPv4 address broker, apart from East Asia, where a quarter of respondents support this approach

Recommendations for future research

- Continue to use individual interviews for the qualitative consultations
 - Allows greater reach
 - More cost effective
- Consider using the APRICOT forum for some consultations / interviews
 - Lends itself well to talking to NIRs in particular
- Review language translations
 - Few surveys taken in Hindi, Malaysian, Nepali, Tagalog or Urdu
- Consider more free text questions asking for reasons for respondents ratings of value, satisfaction and endorsement to gather more information to support changes in ratings across different Survey periods
- Consider use of Captcha or surveys with logon codes
 - Mitigates against 'Bot' attacks
 - Adds additional layer of security
 - Survey Matters software provider is also examining other ways to create anonymous survey links to provide greater security

QUESTIONS

Agenda Item 11

Secretariat report

APNIC Secretariat Report

To 31 July 2020

CONFIDENTIAL DRAFT 1.0

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Executive Summary

Introduction

This report is provided to the APNIC Executive Council (EC) for the quarterly meeting held online on 4 September 2020. It provides a summary of activities from 1 January 2020 to 31 July 2020.

The structure of this report reflects the APNIC Strategic Plan 2020-2023 and the 2020 Operational Plan, with activities reported according to Strategic Pillar and Workstream, and against their current Success Measures. Future reports will provide more complete performance details as the year progresses, and continuous improvement to the reporting of numeric and graphical data.

Feedback on this report is very welcome.

Highlights

The following is a summary of significant highlights for the year to date, also grouped according to Strategic Pillar.

Membership

- APNIC Membership passed 8,000, with 8,136 Members as of 31 July. (1A.1).
- The 2020 APNIC Survey was conducted from 13 to 31 July. Early results show a 30% participation increase compared to 2018, with over 1,600 responses. More than 35% of respondents used translated versions that were available in 16 languages. (1A.4)
- The new MyAPNIC portal was successfully released in February and was migrated to the 'APNIC Login' SSO (1B.1).
- The whois 'abuse-c' attribute was reinstated to parent objects and will reference the IRT objects via a newly created 'Role' object ([prop-125](#)) (1B.1).
- A fully online election platform was successfully implemented ahead of the EC election at APNIC 49. (1B.3).
- A new APNIC membership application form was launched in June. (1B.1).
- The 2020-2023 Strategic Plan, 2020 Activity Plan, and 2019 Annual Report were published (1C.1).

Registry

- The annual target of 65%+ APNIC Members holding IPv6 address space was reached in April (2A.1).
- A new IPv4 Listing Service for Members to publish available IPv4 address space was deployed in July (2A.4).
- The first RDAP cloud deployment was completed, resulting in high availability and a significant reduction in RTT (2B.2).
- A public testbed of ASO ROA ([prop-132](#)) was deployed (2B.3).

Development

- Preparations for the online-only APNIC 50 continue. A simplified conference registration form was implemented. There were 486 registrations as at 31 July (3A.1).
- Funding of the ISIF Asia 2020 Network Operations Research Grants was expanded to USD 120K to select four projects (3B.2).
- The Networking from Home (NFH) event series was launched in collaboration with 21 NOGs. Three events were held in June and July, with 993 participants from 39 economies (3C.1).
- Staff participated in 19 security events and 6 CERT engagements (3C.2).

- APNIC staff authored the chapter 'Putting the technical community back into cyber (policy)' of the *Routledge Handbook of International Cybersecurity*, published in February (3C.4).
- A sector membership application was submitted to the ITU-T, subject to a requested fee exemption (3C.5).
- Regional preparations for ITU's World Telecommunication Standardization Conference began and proposals about IPv6 and the future of the IP protocol were monitored (3C.5).
- The first meeting of the new Routing Security SIG was held at APNIC 49 (3D.1).
- The online participation campaign for APNIC Academy helped attract 1,806 attendees to eleven webinars and generated 589 new APNIC Academy user registrations (3D.2).
- The APNIC Academy is developing a new Network Management and Monitoring course and added a new course catalogue and learning pathways guide to the website (3E.1 and 3E.8).
- All face-to-face training moved to live online training events as well as self-paced online courses and virtual labs (3E.3).
- Contracts were renewed for 18 Community Trainers (3E.4).
- RPKI adoption has increased in 2020. Members with ROAs have increased from 27.2% in January to 39.6% in July. (3E.6).
- MoU with WIDE and JPRS on M-root collaboration signed and preparation for the first trial deployment in Brisbane is in progress (3F.3).

Information

- The APNIC Blog experienced a 23% increase in views and has passed 2 million views (all time) (4A.1).
- Updates were launched to Internet Directory and Dashboard for AS Health (DASH) products (4A.2).
- APNIC Labs published 19 blog articles on research findings (4B.2).

Capability

- A new gigabit IX connection was established with EdgelIX Australia at NextDC B1 (5A.2).
- Deprecation of TLS v1.0 and v1.1 was completed across all APNIC web services, with API/machine accessed services to be completed in August 2020 (5A.3).
- External penetration testing was completed with the final report detecting no high severity vulnerabilities (5A.4).
- Internal Acceptable Use Policy (AUP) and Bring Your Own Device (BYOD) policies were updated (5A.4 and 5A.5).
- A remote connection to Equinix IX in Singapore was established to allow direct peering with networks in South East Asia and South Asia to improve network latency (5A.6).
- A COVID-19 BCP response team was established to monitor and advise on APNIC staff travel, office operations and events during the pandemic. (5B.3 and 5C.2).
- APNIC filled nine vacant roles (5C.3).
- Updated privacy statements for APNIC and the Foundation were published (5D.2).

Budget Performance

The following table summarizes budget performance to date, for FTE (staff time) allocation, and operational and capital expenditure, across all workstreams.

Pillar	Workstream	FTE			Expense			Capital		
		Budget	Actual	Variance	Budget	Actual	Variance	Budget	Actual	Variance
Membership	Member Services	9.8	9.3	5%	1,405,046	1,267,642	-10%			
	Membership Products	7.15	7.8	10%	635,128	652,095	3%			
	Membership Reporting	0.6	1.1	75%	366,830	268,653	-27%			
Registry	Registration Services	3.7	4.7	28%	363,344	363,895	0%			
	Registry Products	5.3	4.5	-15%	465,101	518,557	11%			
	Policy Development	0.85	0.7	-18%	280,255	140,318	-50%			
Development	APNIC Conferences	4.6	5.0	9%	632,082	618,245	-2%	581	-	-100%
	Foundation Support	1.15	1.2	5%	546,516	486,814	-11%			
	Community Engagement	7.15	6.4	-10%	1,425,487	1,014,909	-29%			
	Community Participation	1.1	0.5	-53%	114,830	101,571	-12%			
	APNIC Academy	8.45	7.4	-13%	1,330,545	967,033	-27%			
	Internet Infrastructure Support	1.1	0.7	-32%	768,980	607,960	-21%	230,419	7,957	-97%
Information	Information Products	4.9	5.6	14%	447,177	474,646	6%			
	Research and Analysis	0.85	1.2	37%	490,262	402,092	-18%	46,669	4,289	-91%
Capability	Internal Technical Infrastructure	13.1	12.3	-6%	1,789,527	1,693,319	-5%	146,769	178,666	22%
	Finance and Business Services	8.2	6.7	-18%	1,120,389	978,441	-13%	32,081	4,314	-87%
	Employee Experience	2.45	4.4	81%	961,212	792,673	-18%			
	Governance	1.55	1.6	1%	493,769	439,026	-11%			
		82	81.2	-1%	13,636,480	11,787,889	-14%	456,519	195,226	-57%

Notes: ■ ≤ 25% variance ■ > 25% ≤ 50% variance ■ > 50% variance

Table 1: Budget Performance Summary

1 Membership



1A Member Services

Operations

1A.1 Member services

SLA for service requests

- While maintaining an average above 99%, SLA achievement was slightly reduced during March and April this year as the Services team adjusted to working from home due to COVID-19.

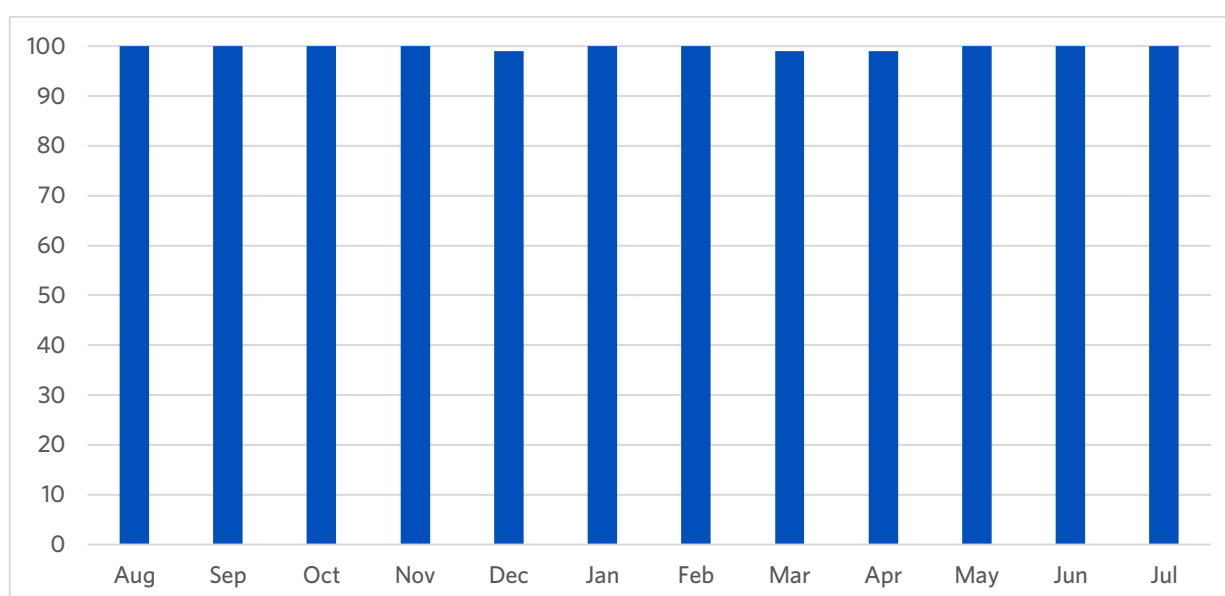


Figure 1: Services SLA

Service satisfaction ratings

- Service satisfaction remained high with 92.5% 'excellent' and 'above average' scores, and 4.5% 'below average' and 'poor' scores.

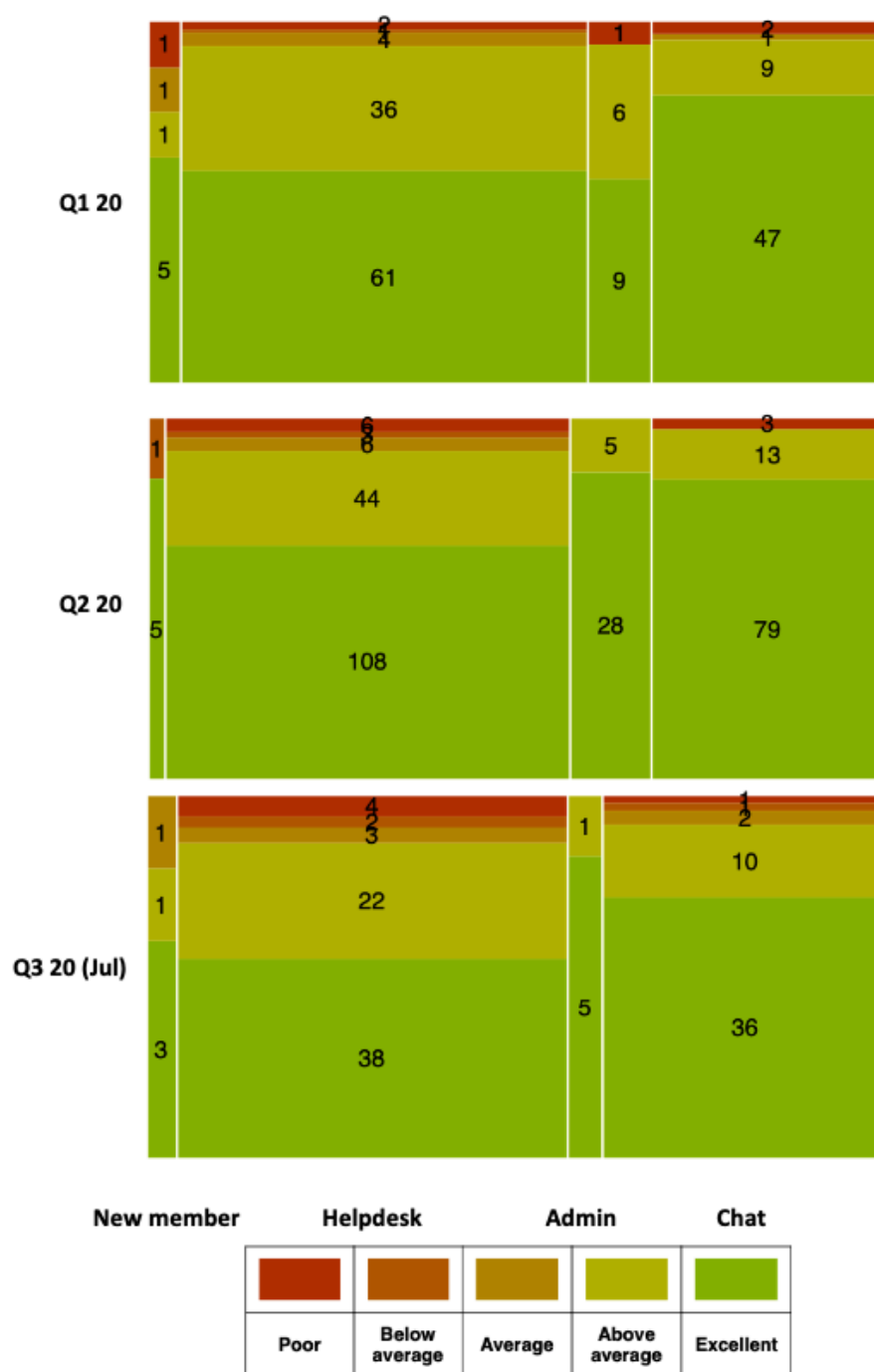


Figure 2: Service satisfaction

Membership Growth

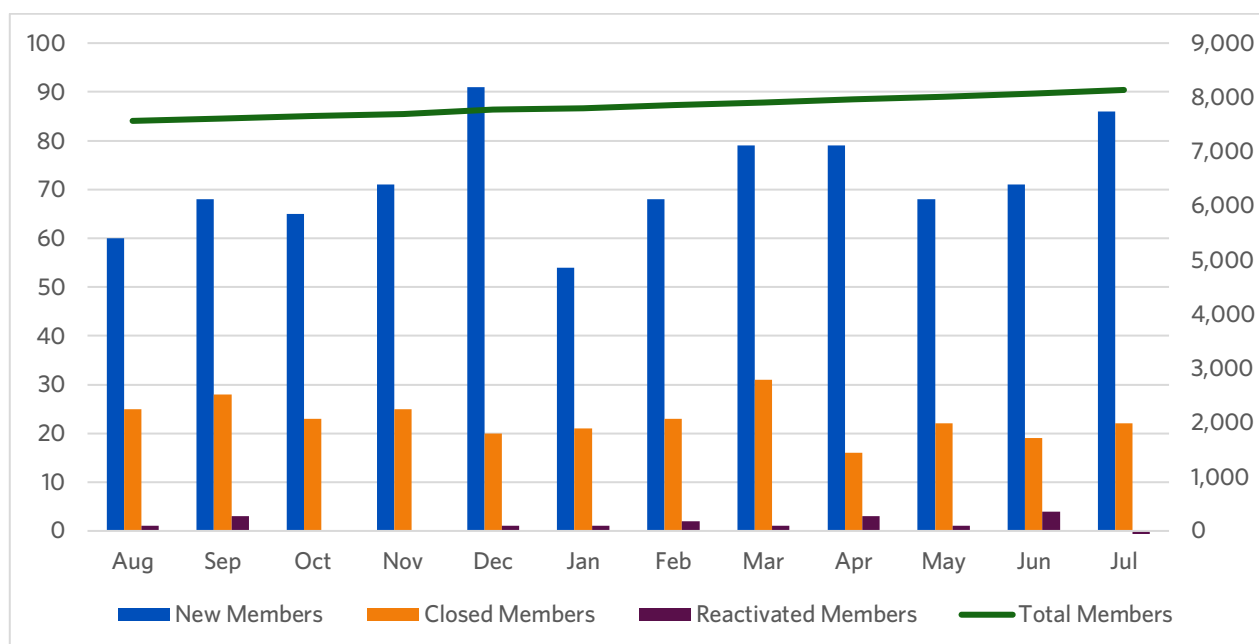


Figure 3: Membership transactions

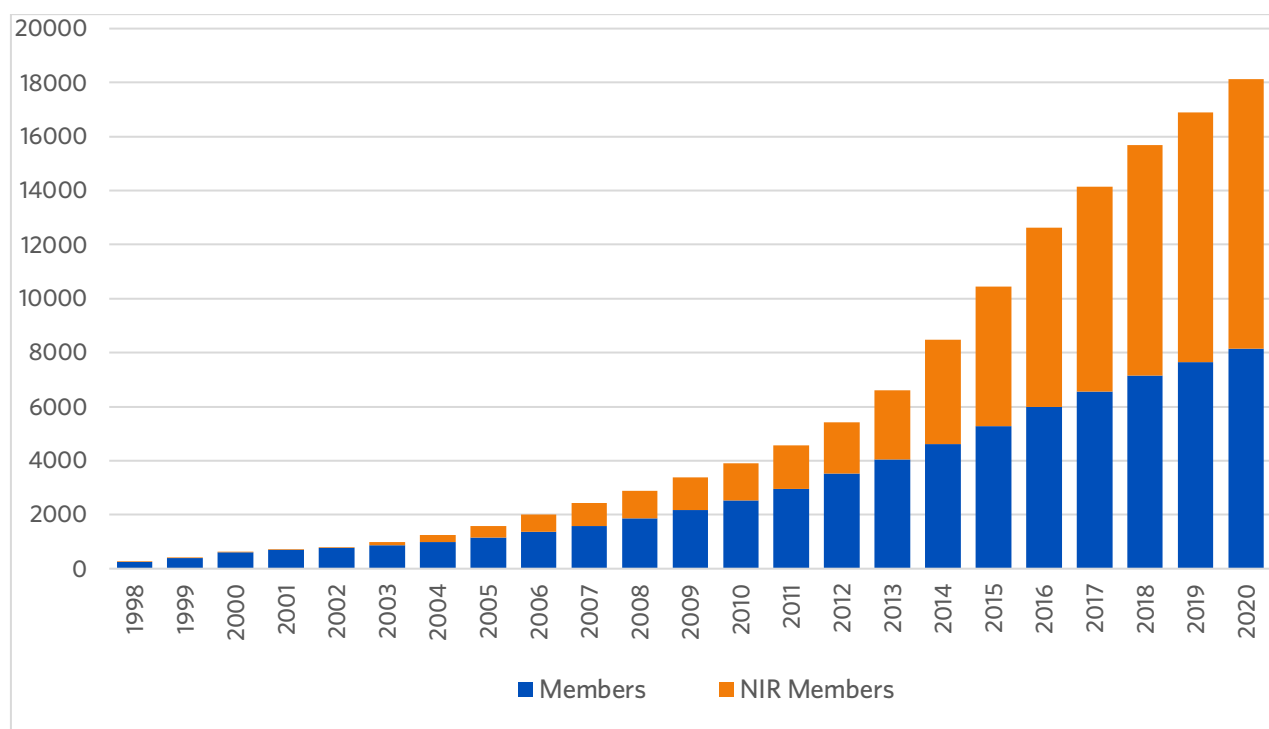


Figure 4: Total Membership

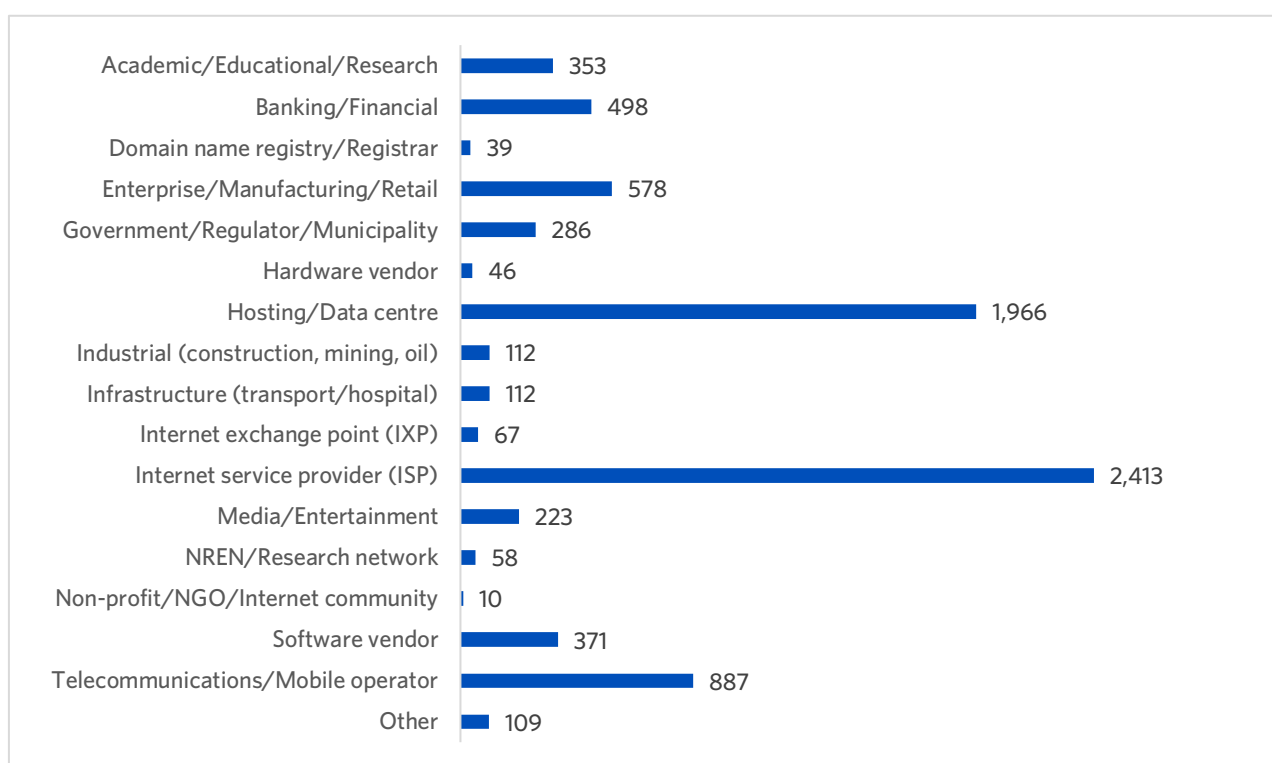


Figure 5: Membership by industry type

Fraud Handling

- Fraud cases increased during March and April, with more attempts detected to open APNIC accounts with fabricated documents. Cases returned to lower levels in May-July.
- An audit of similar past cases resulted in some account cancellations due to breach of the membership agreement.

Type	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July
Identity theft	-	-	-	-	2	-	-	1	1	1	-	-
Fabricated documents	-	1	-	-	1	1	-	5	6	1	-	1
Fabricated needs	-	-	-	-	-	-	-	-	-	-	-	-
Total fraud cases	0	1	0	0	3	1	0	6	7	2	0	1

Table 2: Fraud cases

1A.2 Member experience

- A monthly review process on feedback collected across all channels was established, with results shared in fortnightly leadership team meetings.
- An independent third party was appointed to conduct an accessibility audit of APNIC websites, due for completion in October.

1A.3 Membership development

- New Member outreach was conducted at APRICOT 2020 and at NOG events including SANOG 35, JANOG 45 and MMIX and MMNOG Forum 2020.
- A total of 505 new Members have joined APNIC in 2020 (see 1A.1).
- Twelve new Members came from Member referrals, five of which were referred by Service Partners.

1A.4 APNIC Survey

- Survey Matters attended the EC meeting during APNIC 49 and presented recommendations for the 2020 APNIC Survey.
- In place of previous Focus Group meetings, 41 remote interviews with APNIC Members and other stakeholders were conducted across 26 economies (including all seven NIRs) providing direction for the development of the online survey questionnaire.
- The final draft of the survey questionnaire was approved by the EC in June and the survey was held from 13 to 31 July.
- Survey participation increased by more than 30% compared to 2018, with over 1,600 responses.
- More than 35% of respondents used the translated versions (available in 16 languages).
- Final results will be reported by Survey Matters at APNIC 50.

Success measures – 1A

Targets	Progress (to date)	On Target?
Maintain helpdesk SLA of 48-hour business day response to enquiries	99% SLA	●
Maintain service satisfaction ratings of at least 92% “excellent and above average” feedback, and less than 5% “poor and below average” feedback.	92.5% 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	8,136 Members	●
Member outreach activities in 90% of economies with APNIC Members	83% economies covered	●
Baseline measurement of membership data currency and accuracy established	In progress	●
Successful completion of the APNIC Survey 2020, with at least 10% more respondents	In progress	●
APNIC Survey follow-up actions monitoring page updated	In progress	●

1B Membership Products

Operations

1B.1 Membership product management

MyAPNIC

- Updates were released in February including the introduction of a dashboard for APNIC tools, services and activities.
- Access authentication was migrated to the 'APNIC Login' Single Sign On (SSO).
- User research and usage patterns are being analysed to improve user experience and prioritize feature development.

Prop-125 validate IRT emails

- The process for IRT email validation was presented at APNIC 49, and implementation was completed in May.
- An 'abuse-c' attribute was reinstated to every parent resource object, and will reference the IRT object via a newly created 'Role' object.

Membership application form

- The new membership application form was launched in June.
- This has produced a 30% decrease in correspondence needed to process a new application and a 70% decrease in fake applications compared with the same period in 2019.

Process and system improvements

- A new internal API was developed to allow Member data to be shared between authenticated internal applications.
- Transfer invoicing was fully automated, saving an estimated three hours per week of work by the Services and Finance teams.

Success measures – 1B

Targets	Progress (to date)	On Target?
Creation of baseline metrics, segmentation and categorization of RT tickets	In progress	●
Identification and analysis of online features with high latency; issues solved where possible	3 high latency features identified, 1 solved	●
Create a baseline measurement of "mean time to deploy"	Complete	●

Investments

1B.2 Online community platform

Developing a prototype online participation platform for community members to share knowledge and experience related to APNIC products and services.

Objectives:

- Identify and implement a common platform to support online participation by the APNIC community.
- Configure and populate the platform with related FAQ and knowledge base information.

Status:

- Initial target communities have been identified as Members, training participants, network engineers, and SIG members.
- User needs from these communities will be validated before prototype design.
- A Help Centre (providing FAQs and other product/service information) is being included in the first stage of the project.

1B.3 Election system

Replacing the previous in-house online election system with an external voting platform (BigPulse).

Objectives:

- Introduce trusted online participation independent third-party voting platform, removing reliance on internal APNIC software.
- Eliminate paper forms used for proxy assignment and onsite voting during APNIC Member Meetings.

Status:

- Following a trial with 73 community participants, BigPulse was implemented and integrated into MyAPNIC ahead of the EC election at APNIC 49 (February 2020).
- All voting, including proxy appointment, was completed online by 913 participants without any paper forms required. The total votes received in this election (13,603) was the highest on record.
- The new system will be used for the NRO NC elections during APNIC 50.




1C Membership Reporting

Operations

1C.1 Planning and reporting

- The new 2020-2023 Strategic Plan was presented at the APNIC AGM on 21 February. The new plan introduces five 'Strategic Pillars' and 18 'workstreams' that form the structure of the 2020 Activity Plan.
- The 2020 Activity Plan and Budget, and the 2019 Annual Report, were presented at the APNIC AGM on 21 February.
- The 2020 Budget was revised due to impacts of the COVID-19 pandemic, and is being reviewed monthly during the remainder of 2020.
- Event Wraps (all but two) have been published in line with the KPI.

Success measures – 1C

Targets	Progress (to date)	On Target?
On-time publishing of required reports at the APNIC AGM and at APNIC 50	Completed for APNIC 49	
Publishing of EC Minutes within two months of each EC meeting	Minutes published on time	
Event Wraps published for 100% of reportable events within one month of event	18/20 published within one month	



2 Registry

2A Registration Services

Operations

2A.1 IPv4, IPv6 and ASN delegation and registration services

Resource pools

- The following table shows the current status of all APNIC number resource pools.

	Total at 1 Jan 2020	From IANA	Transfers in	Transfers out	Total at 31 July 2020	Total delegated	Total reserved	Total available
IPv4 (/24s)	3,479,169	0	3,298	352	3,482,115	3,454,749	12,408	14,958
IPv6 (/32s)	1,067,008	0	0	0	1,067,008	83,674	127,338	855,980
ASNs	19,094	0	2	0	19,096	17,718	0	1,378

Table 3: Resource pool status

IPv4, IPv6 and ASN delegations

- The following graphs show the number of delegations for each resource type, and the distribution of delegations by subregion.
- The peak in ASN delegation in March was due to a bulk allocation to a confederation Member in China. The peak in June resulted from a bulk allocation to VNNIC.

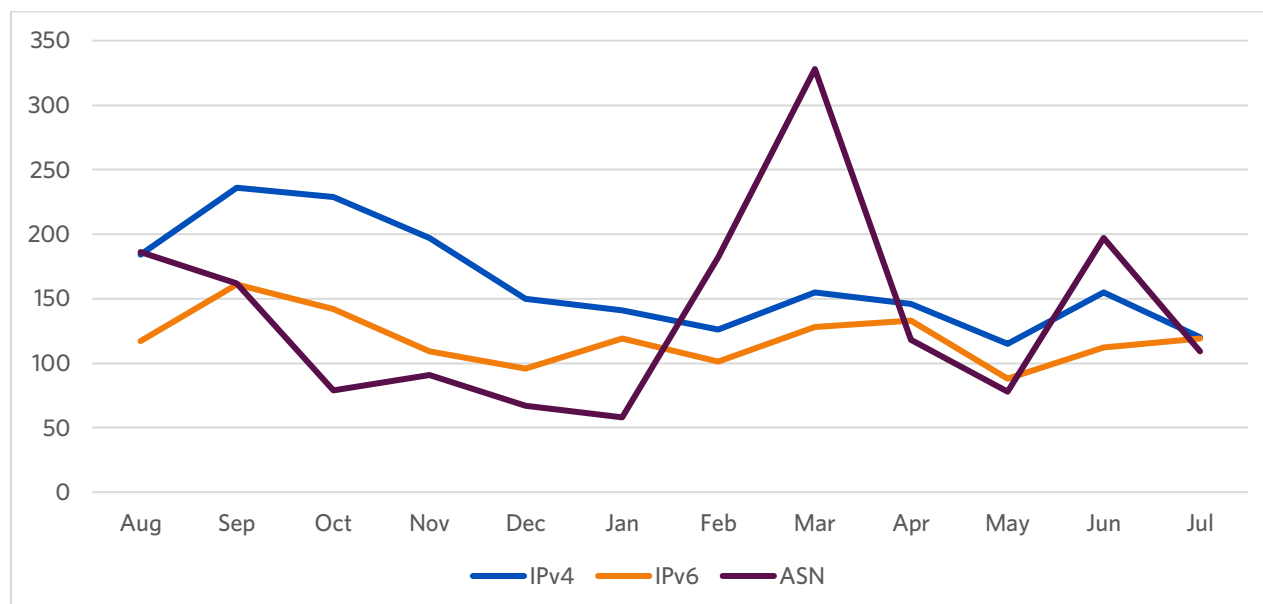


Figure 6: Internet number resource delegations

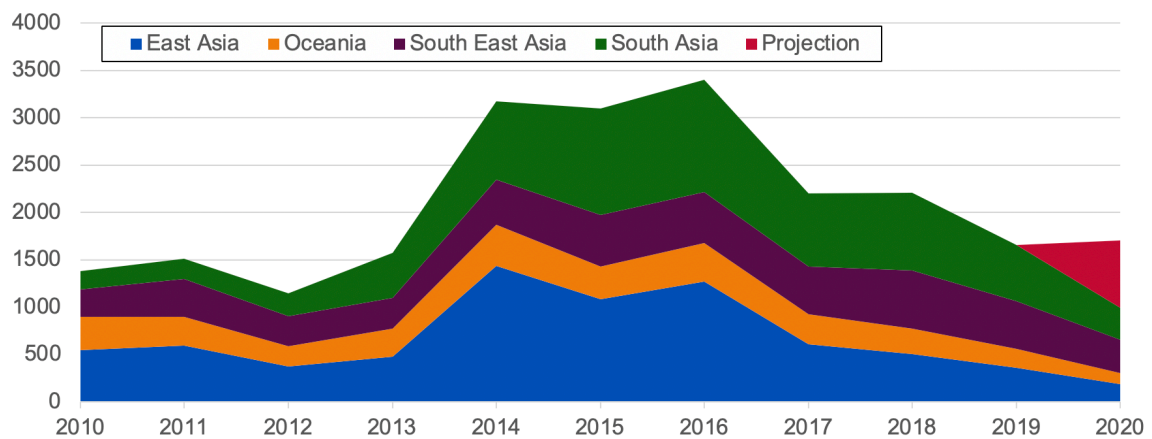


Figure 7: IPv4 delegations

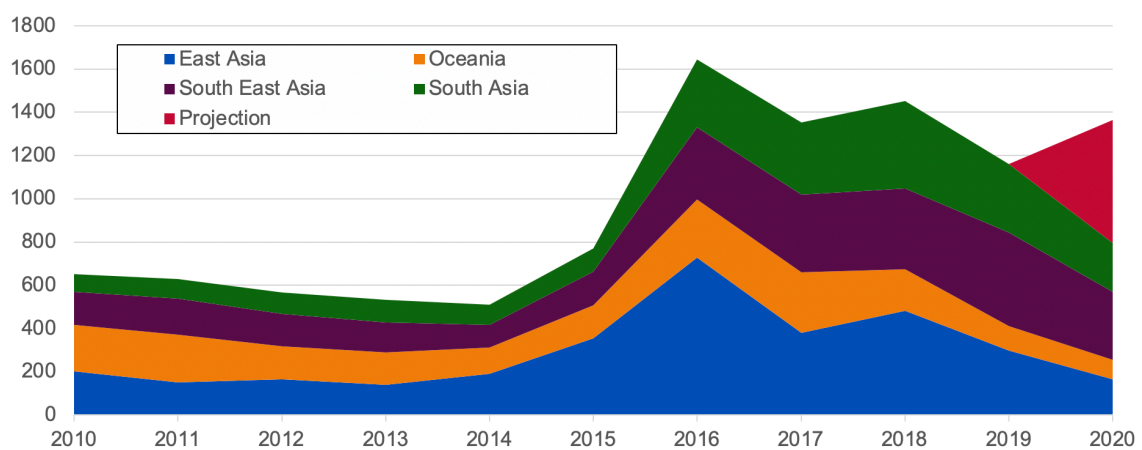


Figure 8: IPv6 delegations

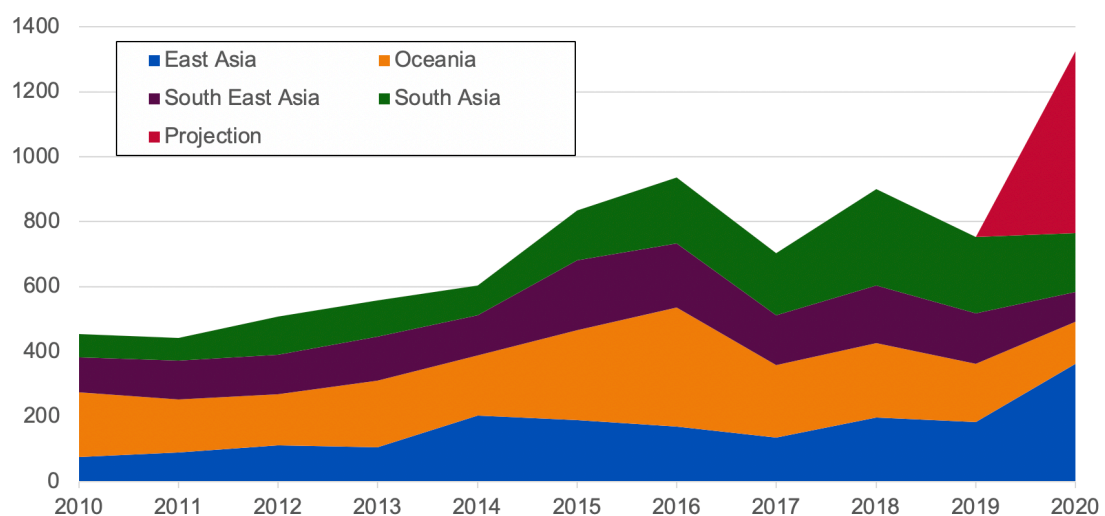


Figure 9: ASN delegations

Member resource holdings

- The proportion of APNIC Members holding specific resource types is as follows. The percentage of Members holding IPv6 exceeded 65% (a target for 2020) in April.

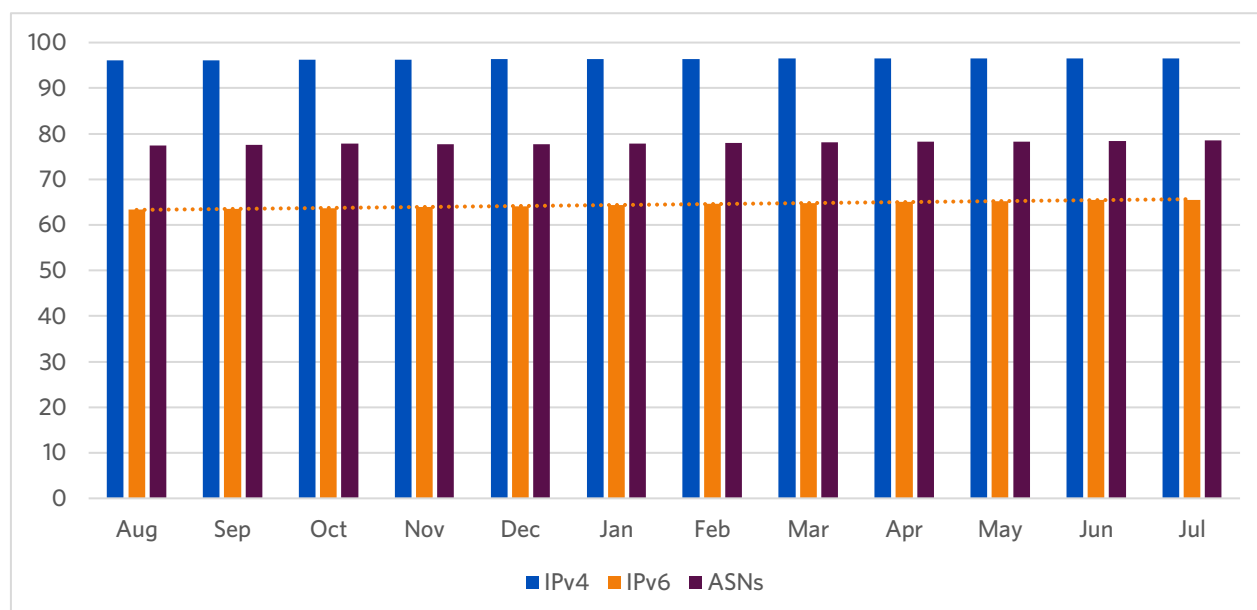


Figure 10: Member resource type holdings

IPv4 Pool Status

- The following chart shows the number of reserved and available space in APNIC's IPv4 pool.
- The increased available space in April and July was due to returned space from account closures that passed resource quality checks (reserved space) and were returned to the available pool, under the IPv4 resource recovery project.

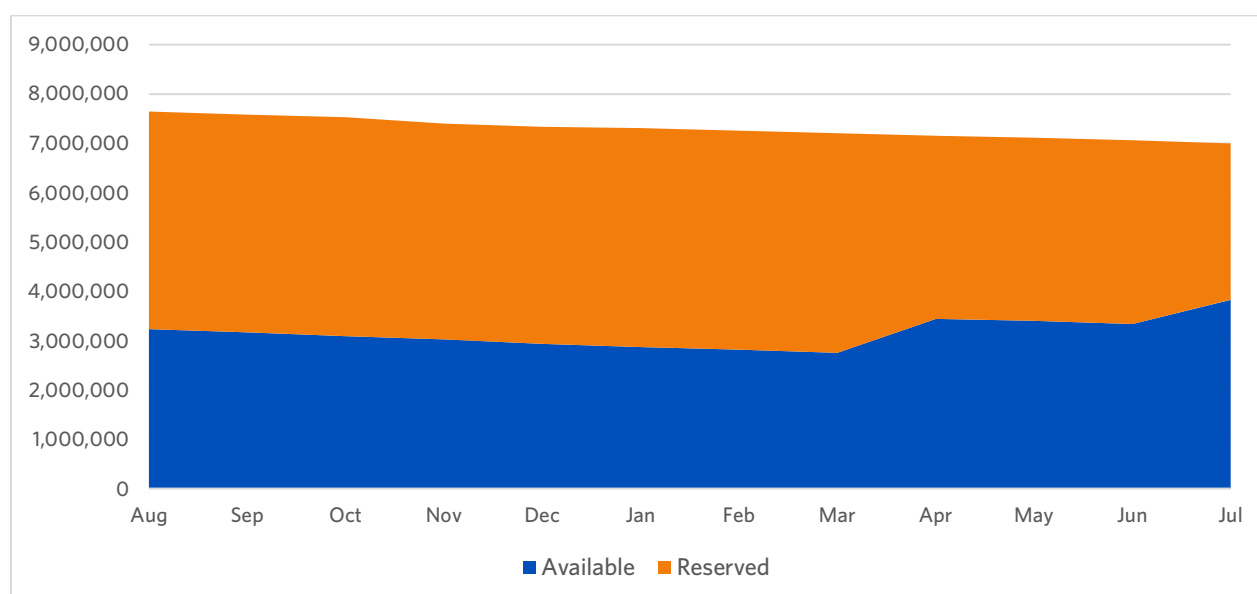


Figure 11: IPv4 Pool Status

IPv4 transfers: Mergers/acquisitions and historical

- M&A transfer activity increased in May and June (mostly occurring in East Asia economies).
- A single large historical resource transfer (/9 + /10 + /11) was completed in March (3B.1).

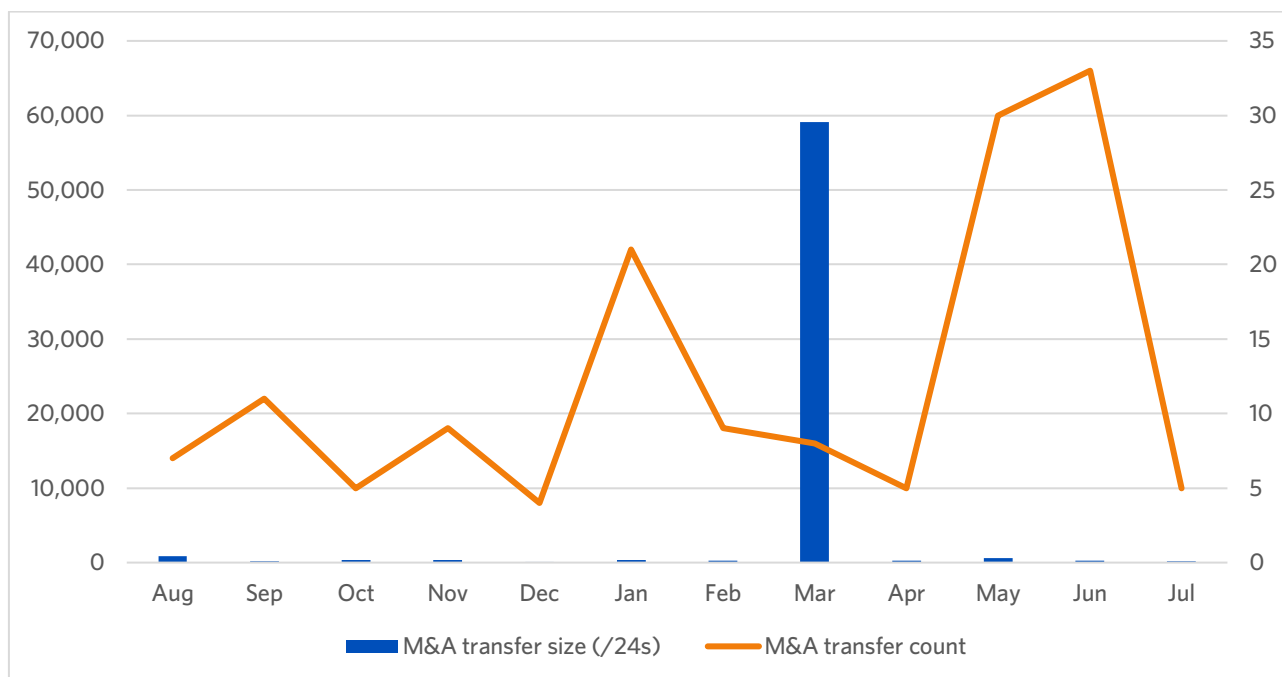


Figure 12: M&A and historical transfers

IPv4 Market transfers

- Compared with last year, market transfers within the APNIC region were similar in number, but all were small in size.
- CNNIC made some administrative changes in November and December last year that appear as transfers between CNNIC members.

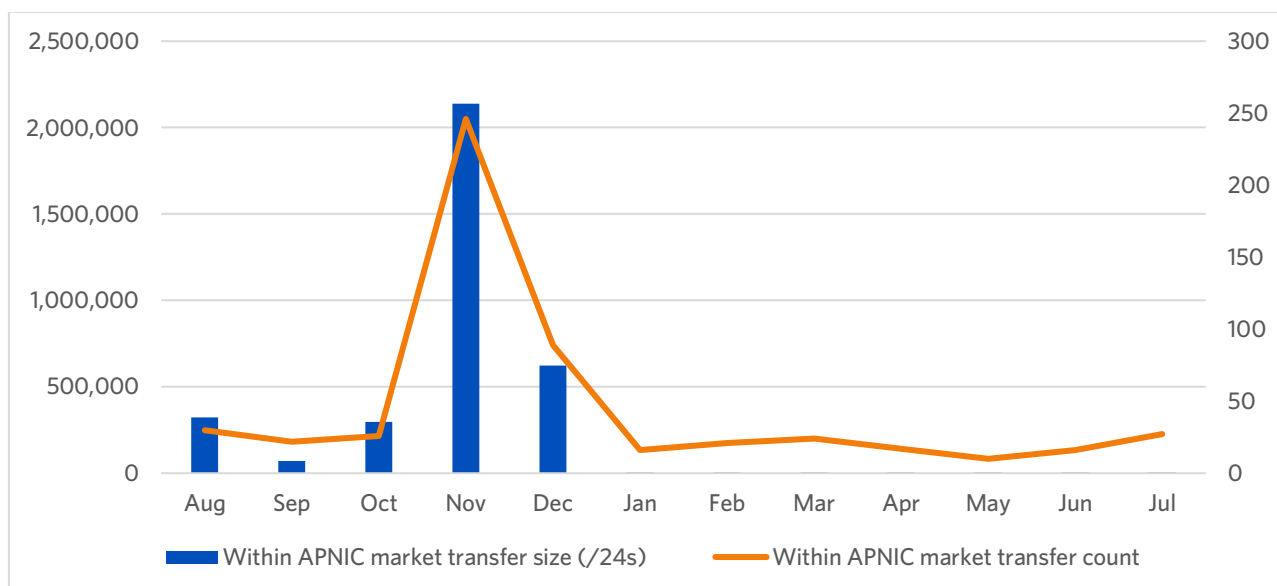


Figure 13: Market transfers

Market transfers – Inter RIR

- No large Inter-RIR market transfers have occurred so far during 2020.

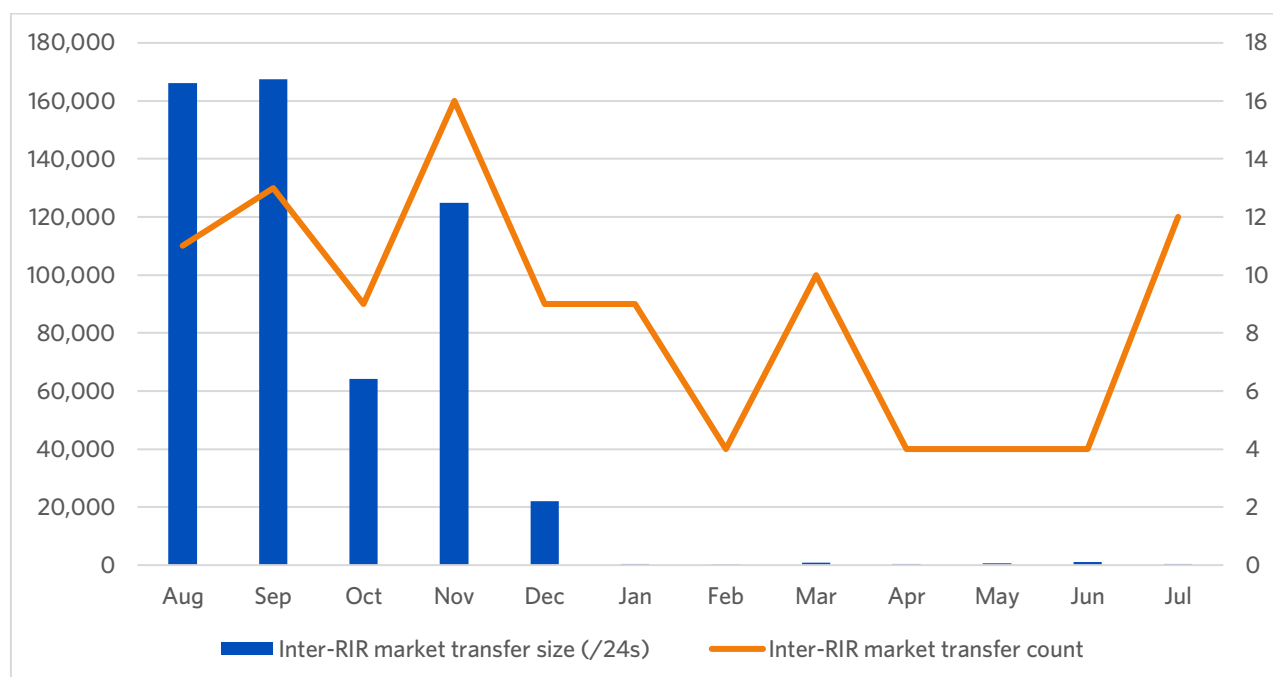


Figure 14: IPv4 transfers

2A.2 Resource Quality Check (RQC)

- RQC functionality in the Network Operators ToolBOX (NetOX) provides routing history, transfer history, geolocation and blacklist information.
- Usage measurement was implemented in March 2020 and the RQC page received 180 views from March-July.

2A.3 Maintain correct and current registry data

- 500 accounts that have not yet created their organization objects were identified. These Members will be assisted to create these objects and associate them with their Internet number resources.
- Assistance was provided to CNNIC to correct a set of IPv4 transfer records and published the updated transfer log on 28 April.
- Members now validate their IRT email every six months following the [prop-125](#) policy.

2A.4 Reclaiming unused IPv4 address space

- A new service allows Members to list IPv4 address space which is available for market transfer. Members with unused IPv4 addresses are being encouraged to return them to APNIC, or to make them available for transfer to others.

Success measures – 2A

Targets	Progress (to date)	On Target?
Maintain Helpdesk SLA of 48-hour business day response to enquiries	99% SLA	●
Maintain service satisfaction ratings of at least 92% “excellent and above average” feedback and less than 5% “poor and below average” feedback	92.5% excellent and above average 4.5% poor and below average	●
Percentage of Members holding IPv6 address space increased to 65%	65.53%	●
Measurement system for APNIC RQC service implemented	Completed	●
A method to measure whois contact accuracy and currency established	In progress	●
Attempt contact with all (2,800+) identified resource holders with potentially unused IPv4 addresses, to offer options for return or transfer of resources	In progress	●

2B Registry Products

Operations

2B.1 Internet number resource management

- ARMS (APNIC Registry Management System) was updated to support return of terminated resources to the ‘available’ free pool, for subsequent redelegation.
- ARMS updates were also completed to support audited correction of errors in historical resource records.

2B.2 Registry product management

- Five meetings were held with NIRs at APRICOT 2020/APNIC 49.
- Online workshops with VNNIC were held to coordinate the deployment of a new VNNIC registry system to improve data alignment with APNIC and improve VNNIC service delivery.
- The first RDAP cloud deployment was completed in Q1 2020 to Sydney, resulting in significant reduction in RTT and improvement in availability. A second deployment is planned for Q3/Q4.
- Thirteen user experience (UX) interviews were held at APRICOT 2020/APNIC 49 regarding route management systems. UX interviews will continue online (only) for the rest of 2020.
- Review of the RPKI Certification Practice Statement is underway, for completion in 2020. This work has been shared with the RIPE NCC as part of RIR cooperation on RPKI resilience.

Success measures – 2B

Targets	Progress (to date)	On Target?
Successful implementation of pool service changes for historical record amendment	Completed	●
Seven product development engagements at APNIC conferences	Five engagements completed	●
RDAP service deployed to the cloud in two regions	First region complete	●
Fifteen user experience interviews for registry products and APRICOT and IETF meetings	Thirteen UX interviews completed	●
RPKI Certification Practice Statement review completed	In progress	●

Investments

2B.3 RPKI ASO ROA

Publication of ASO ROA, according to [prop-132](#).

Objectives:

- Complete proposed implementation plan, and report at APNIC 49.
- Redesign of internal (ARMS) tools and deploy services during 2020, with updates provided at APNIC 50.

Status:

- A public testbed of the ASO ROA was deployed for APNIC 49 and continues to operate, collecting data on usage.
- Coding work continues on the production service, for deployment before APNIC 50, where an update will be presented.
- Liaison continues among the RIRs where ASO ROA proposals are under discussion.

Additional investments:

- Funding for OpenBSD to implement RRDP in their codebase (work underway, due in September/October 2020).
- APNIC has become an annual 'bronze' supporter of NLnet, for software development of the RPKI 'Krill' (CA) and 'Routinator' (RP) software systems.
- Funding for NLnet to implement Resource Tagged Attestations (RTA), with completion expected in Q3.

2C Policy development

Operations

2C.1 Policy development

- Three policy proposals were considered at the APNIC 49 Policy SIG; two did not reach consensus and were returned to the mailing list for further discussion:

- [prop-130](#): Modification of transfer policies
- [prop-133](#): Clarification on Sub-Assignments
- The third proposal was discussed but did not reach consensus and was withdrawn by the author:
 - [prop-134](#): PDP Update
- Ching-Heng Ku and Bertrand Cherrier were re-elected as Policy SIG Co-Chairs during APNIC 49.
- Following his appointment to the APNIC EC, Sumon Ahmed Sabir resigned as Policy SIG Chair, and was replaced by Bertrand Cherrier as Acting Chair.

2C.2 Policy implementation

- Progress on implementing [prop-132](#) is detailed above (2B.3).
- An update on the [prop-125](#) (IRT email validation) implementation was presented at [APNIC 49](#).

2C.3 Policy analysis

- Impact assessments of the three policy proposals submitted for APNIC 49 were conducted by APNIC staff and sent to the Policy SIG, and then presented during the meeting.
- Staff also presented observations on the current experimental allocations policy, and on consolidation trends identified in transfers of 103/8 space.

Success measures – 2C

Targets	Progress (to date)	On Target?
Two Policy SIG meetings held	One SIG meeting held	●
Delivery of two policy analysis presentations at SIG meetings	Two presentations delivered	●
High satisfaction rating from Policy Chairs in annual review of policy support	N/A	●
Meeting agreed implementation timelines 100% of the time	On target	●
Publishing of a 'policy proposals analysis' before each Policy SIG meeting	1/1 published	●
Achieve a service quality rating of 5.75 or above for Policy Development in the APNIC Survey	N/A	●

Investments

2C.4 Policy documentation review

Reviewing APNIC policy documentation, including policies, guidelines and related supporting documents to determine how improvements can be made.

Objectives:

- Review APNIC policy documentation to improve clarity and readability, and identify any areas needing additional community input.

Status:

- Consultant appointed and draft review reports received. An update will be presented at APNIC 50.



3 Development

Operations

3A APNIC Conferences

3A.1 APNIC conferences

APRICOT 2020

- [APRICOT 2020](#) was held in Australia from 12 to 21 February 2020 at the Crown Promenade Melbourne. The event celebrated its 25th year.

Conference statistics	
Total number of on-site delegates	563
Economies represented	60
APNIC Member organizations represented	142
Remote Participants - Zoom	185
Remote Participants - YouTube	2,313 views; 29,190 minutes
#apricot2020 tweets	827 from 277 users

Table 4: APRICOT 2020 statistics

- The third APNIC Hackathon attracted 13 participants who worked on three projects under the 'Network Tools' theme.
- APNIC held an RPKI Deployathon at APRICOT 2020, with support from JPNIC for 40 participants. The APNIC Foundation supported four fellows from IXPs in Bhutan, Nepal, Myanmar and Fiji to attend the event.
- At the [APNIC EC election](#), Sumon Ahmed Sabir (4,135 votes), Kams Sze Yeung (3,524 votes), and Achie Atienza (3,067 votes) were elected for two-year terms.
- Other Internet community events held at APRICOT included a FIRST TC, the DotAsia AGM, APIX meeting, AP* Retreat, a MANRS Community Meeting, and an ISOC Social.

APNIC 50

- Held five coordination calls with ISPAB, as the intended host of APNIC 50, to prepare for the event and review the emerging COVID-19 situation. Venue and supplier negotiations, and all other conference arrangements progressed as normal until April when Dhaka entered a lockdown period.
- On 26 May, it was announced that APNIC 50 will be an online-only event. The closure of international borders and ongoing health risks meant the conference could not go ahead in its original format.
- The Program Committee was formed on 5 May, following a call for volunteers, and the call for papers was announced 12 May. A revised program structure to suit an online-only conference was developed and published. Keynote presenters Phillip Grasso (Google) and Alex Leung (Akamai) were confirmed.
- Meetings were held with ICANN and RIPE NCC event staff to discuss their experience of hosting the online-only ICANN 67 and RIPE 80 meetings.
- A simplified conference registration was developed and implemented in Salesforce. Registrations stood at 486 at the end of July.

- Web platform development and system integration to support a 100% online conference experience is ongoing.

Success measures – 3A

Targets	Progress (to date)	On Target?
Delivery of two conferences (in Oceania and South Asia)	One conference delivered	●
Achieve attendance of 1,000 delegates	563 attendees	●
Achieve 4,000 remote conference session views	2,498 views	●
Achieve a minimum average conference participant satisfaction survey rating of 90%	96.6%	●
Achieve a service quality rating of 6.0 or above for APNIC Conferences in the APNIC Survey	N/A	●

Investments

3A.2 Fellowships

Supporting fellows to participate in APNIC conferences and workshops, including ‘returning’ and ‘youth’ fellowships, with a continued focus on diversity.

Objectives:

- Provide support for selected community members from the region’s developing economies to attend and participate in APNIC conferences.
- Bolster investment by attracting community sponsorship to expand number of fellowships offered.

Status:

- Due to APNIC 50 being held online, travel fellowships will not be available in 2020 but will reopen in 2021 for APNIC 52.

3B Foundation support

Investments

3B.1 Operational and administrative support

Providing support for Foundation operations and administration, according to APNIC standards and underwritten by APNIC in accordance with the AoC of 2018:

- Two full time staff seconded to the Foundation.
- A total of one FTE in operational support.
- Office space, equipment and online system support as required.

Objective:

- Provide support for smooth and reliable Foundation operations.

Status:

- Two seconded full-time staff continued to successfully manage the Foundation's operations and projects. Overhead and project budgets were used to hire additional administrative support and project coordination positions.
- APNIC staff has provided:
 - Finance support — audited financial statements; project budget implementation; APNIC cost-recovery.
 - HR support — employing project coordinators and contractors; workplace facilities, health and safety.
 - Communications support — production of the Foundation's 2019 Annual Report, website improvements and social media management.
- APNIC staff supported the independent audit of the Foundation's 2019 financial accounts, which was completed and approved at the Foundation Board's third Annual General Meeting (AGM) on 2 May.
- APNIC staff supported the creation of the Asia Pacific Internet Development Trust (APIDT), including website development, communications, financial and legal services.

3B.2 ISIF Asia contribution

Providing an annual contribution of AUD 100,000 to ISIF Asia for network operations research grants, and staff participation in grant selection process.

Objective:

- Encourage Internet innovation and network operations research in the Asia Pacific.

Status:

- The 2020 Network Operations Research Grants opened on 2 April, focused on the availability, reliability, and security of the Internet, with a focus on practical solutions around operational stability and security.
- Two grants of USD 30,000 were advertised, for a total of USD 60,000 in funding.
- Following the completion of reviews by the Selection Committee, APNIC extended its support to four projects with total funding of USD 120,000, as follows:

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

Table 5: ISIF Asia 2020 grant recipients

- Due to COVID-19 and the difficulties organizations are facing to access the facilities needed to conduct their research, a no-cost extension of six months has been provided to all grants currently open.

3C Community Engagement

- Due to COVID-19 and subsequent travel restrictions, APNIC's participation at face-to-face events shifted to wholly online representation. See Appendix A for more information.

Operations

3C.1 Technical community support

NOG support

- Supported volunteers from PNG to establish PNGNOG as an open, community-led initiative. Its first online gathering, PNGNOG v0.1, was held on 17 June 2020.
- Supported the following NOGs with sponsorship (s), presentations (p), technical support (t) and program committee (c) contributions in 2020 to date:

	South Asia	South East Asia	East Asia	Oceania
Jan	bdNOG (s) (p) (c) SANOG 35 (s) (p) (c)	MMIX/MMNOG (s) (p) (c)	JANOG 45 (s) (p)	NZNOG (p)
Feb		PhNOG (s) (p) (c)		
June				PNGNOG v0.1 (s) (p) (c) (t) PacNOG (p) (c)
July		PhNOG (p) (c) (t)		

Table 6: NOG support

- After several NOG meeting cancellations, APNIC developed the 'Networking from Home' (NFH) series of four, half-day, online technical events designed to serve NOG communities in four sub-regions.
- Out of 22 NOGs in the region, 21 agreed to collaborate on the events.
- Four NFH program committees (including NOG representatives) were established, and a new [NFH website](#) and communications materials were created.
- Three events were held in June and July, with 993 participants from 39 economies attending, 91% from within the APNIC region. Average watch time for the events was 1hr 40mins (67% of each 2.5hr event).

IXP support

- Sponsored the development and operations of PeeringDB and IXPDB.
- Work continues with local communities to help establish an IXP in the Maldives and reestablish an IXP in Samoa.

NREN support

- Sponsorship for APAN 49 will be refunded to APNIC after cancellation of the event.
- APNIC is a member of the APAN 50 Technical Committee and Security Working Group, and will provide training and technical talks at the online event in August.

3C.2 Security community support

- January:
 - Sri Lanka Research and Education Network, LEARN: Video presentation, Introduction to CSIRTs
 - Pakistan Telecom Authority: two 90-minute remote workshops on CERT establishment.
- February:
 - APRICOT 2020: Organized the FIRST-TC security track, in collaboration with FIRST.org and APCERT members.
 - GFCE Pacific Regional Meeting, Melbourne: Presentation on APNIC's experience working with the Pacific security community .
 - Samoa IT Association's first Security Seminar: Security workshop, presentation and sponsorship.
 - Hong Kong Police Force (HKPF): Presentation on the Community Honeynet.
 - Australian Federal Police (AFP): Meeting on Cyber Safety Pasifika program.
 - RISE-Japan 2020, Team Cymru: Confirmed sponsorship for event in November.
- March:
 - Shadowserver: Sponsorship for its data centre relocation and 2020 operations.
- April:
 - APNIC Academy: Presented a webinar on Physical Information Security.
 - Cambodia Cyber Security Community (Secudemy): Presented a webinar.
- May:
 - FIRST.org: Moderated a session at Cyber Threat Intelligence Summit.
 - EU ATT&CK: Attended Community Workshop.
 - MYREN: Intrusion Detection and Network Security Monitoring tutorial.
 - Indonesian security community session: Spoke on CERTs/CSIRTs
 - Solomon Islands Government Data Centre: Delivered tutorials on Elastic Stack
- June:
 - PacSON: Delivered a Suricata tutorial.
 - Mobicom Mongolia: Presented at the IX 2020 Internet Security and Mitigation of Risk Webinar.
 - Attended the OWASP Thailand meetup, FIRST.org Special Interest Groups (SIGs) meeting, and Reversing Labs 2020.
 - PITA: Presented at the Technical and Business Forum.
- July:
 - PacSON: Delivered a Suricata signature writing tutorial.
 - UCENET and INTERPOL: Presented on Linux malware threats.
 - APNIC Academy: Presented webinars on Incident Response and Threat Sharing and DNS Security (Client Perspective).
 - Attended the SANS DFIR Summit.
 - Pakistan Telecom Authority (PTA): Delivered a workshop on Incident Response and Digital Forensics.
 - GEMNET, Mongolia: Delivered workshop on Security monitoring and analysis with Elastic Stack.

3C.3 Internet organization cooperation

- February:
 - Hosted meetings with AFRINIC CEO, Eddy Kayihura, in Brisbane.
- March:
 - Participated in ICANN 67.
 - IETF 107: Participated in SIDROPS, REGEXT and DNSOP sessions.
- May:
 - Participated in LACNIC 33 and RIPE 80.
 - NRO: Participated in NRO EC virtual retreat.
- June:
 - ICANN 68: Participated in the virtual Policy Forum.
 - Participated in the I-star organizations' leadership meeting..
 - NRO: Participated in the Resource Services Coordination Group (RSCG) and Legal Team joint meeting.
 - AFRINIC: APNIC participated in 'Internet Infrastructure Support in Times of Crisis' webinar.
- July
 - Participated at ARIN 45.

Between January and July, APNIC attended seven NRO EC regular teleconferences, eight Internet Technical Collaboration Group (ITCG) calls, two Engineering Coordination Group (ECG) meetings and four NRO Public Safety Coordination Group (PSCG) virtual meetings.

3C.4 Internet governance participation

- February:
 - APNIC staff authored the chapter "Putting the technical community back into cyber (policy)" of the *Routledge Handbook of International Cybersecurity*. The book was published in February.
 - APriIGF: submitted three workshop proposals.
- April:
 - IGF 2020: Submitted a workshop proposal entitled 'Flattening the curve of irresponsible state behaviour online'.
 - Joyce Chen was appointed as a member of the APriIGF Program Committee.
- May:
 - Pablo Hinojosa was appointed as a member of the ITCG nomination committee to recommend technical community representatives for the IGF Multistakeholder Advisory Group (MAG).
- June:
 - Participated in the IGF 2nd Open Consultations and MAG meeting.
 - Participated in a series of dialogues organized by the UN Secretary General on a Roadmap for Digital Cooperation.
 - Participated at the Hong Kong IGF 2020.
 - WSIS Forum 2020: Began participating in ongoing preparation for September 2020 event.

- July
 - Broadband India Forum: Paul Wilson gave a keynote address.
 - China IGF 2020: Paul Wilson delivered a welcome message.
 - Participated in RightsCon Online 2020.
 - EU Cyber Direct's 'Closing the Gap' conference: Participated in sessions about Knowledge, Gender and Diversity gaps, and International Law and Accountability.
 - Fair Tech Forum (Access Partnership): Participated at a panel entitled 'Is APAC cyberspace secure'.

Between January and July, APNIC participated in 18 preparatory calls for APriGF, six preparatory calls for Net-Thing (Australia) and discussions in preparation for TWIGF. APNIC was in contact with a new national IGF initiative in China, launched in May.

3C.5 Government engagement

- January:
 - Participated in a public consultation about responsible state behaviour in cyberspace conducted by the Australian government.
- February:
 - Participated in the 2020 Global Cybersecurity Capacity Building Conference and the GFCE Pacific Regional Meeting in Melbourne.
 - Australian Federal Police (AFP): Discussed continued training for Law Enforcement Agencies (LEAs) in the Pacific region as part of the Cyber Safety Pasifika program.
- March:
 - ITU: Met to discuss the reestablishment of an IXP in Samoa (discussions continued in July).
- April:
 - Joyce Chen joined APNIC as Senior Advisor — Strategic Engagement.
 - ITU:
 - Met with the new Director of ITU's Regional Office for Asia and the Pacific, Ms Atsuko Okuda, regarding capacity-building on IPv6 and Internet governance.
 - Submitted a membership application to ITU's Telecommunication Standardization Sector (ITU-T), subject to a fee exemption. The membership will allow APNIC to participate in the World Telecommunication Standardization Assembly (WTSA).
 - Monitored progress of Global Cybersecurity Agenda (GCA) and the World Telecommunication/ICT Policy Forum (WTPF).
 - Australian Government: Presented at a webinar on the UN Open Ended Working Group (OEWG) and the UN Governmental Group of Experts (GGE) processes regarding ICT and international security.
 - Asia Pacific Telecommunity (APT): discussed capacity-building partnerships and a possible expert mission on IPv6 for Sri Lanka.
- May:
 - APT:
 - Participated in the second APT regional preparatory meeting for WTSA 2020.

- Participated in regional preparations for ITU's 2021 World Telecommunication Development Conference (WTDC).
- Global Forum on Cyber Expertise (GFCE): Spoke at virtual meetings commemorating GFCE's fifth anniversary.
- June:
 - ITU: Monitored progress in the Telecommunication Development Advisory Group (TDAG) meeting, ITU Virtual Consultation of the Council, and virtual interim meeting of the ITU APT WTSA20 Working Group 3.
 - MPTC, Cambodia: Met with the Secretary of State from the Ministry of Posts and Telecommunications (MPTC) to discuss number resources and technical training.
 - UN Institute for Disarmament Research (UNIDIR): Spoke in a session titled 'Implementing Cyber Norms: National Experiences and Emerging Good Practices'.
- July
 - UN International Narcotics Control Board (INCB) meetings: Spoke at session titled 'Expert Group Meeting on Dangerous Substance Trafficking through Social Media and other Internet-related Services'. APNIC represented the NRO PSCG at the meetings.
 - ITU:
 - Monitored progress in the ITU APT WTSA20-3 Preparatory Meeting, ITU Study Groups 11 and 13, and the WTDC 21-1 Preparatory meeting.
 - Participated in the ITU Global Symposium for Regulators 2020 (GSR) (ongoing), World Summit on the Information Society (WSIS) Forum (ongoing), and UN High Level Political Forum (HLPF) 2020.

Success measures – 3C

Targets	Progress (to date)	On Target?
Sponsor or participate in 30 technical community events including NOGs, Peering Forums and Research & Education community events	Sponsored/participated in 13 technical events	●
Facilitate and support two new/revived NOGs	One new NOG supported	●
Sponsor or participate in 10 security community events	Sponsored/participated in 16 security community events	●
Support targeted development of three new/existing CERTs/CSIRTs	Supported development of 2 new/existing CERTs/CSIRTs	●
Ensure APNIC participation in each of the RIR meetings	3/3 RIR meetings attended	●
Provide APriGF sponsorship and participate in APriGF and IGF with workshop proposals, MSG/MAG participation, and speaking roles	Three APriGF workshop proposals submitted APriGF sponsored Participated in IGF MAG and APriGF MSG	●
Participate in at least three national Internet governance initiatives	2 engagements	●
Provide sponsorship/speaker support to at least two schools of Internet governance	No engagements	●
At least 12 engagements with governments and intergovernmental organizations, including capacity-building partnerships	15 engagements	●
At least six engagements with the Public Safety community	6 engagements	●

3D Community Participation

Operations

3D.1 Community-led processes

- Promotion of APRICOT 2020 included six email bulletins; social media promotion via Facebook, Twitter and LinkedIn; and the APNIC Blog 'AUSeries', a week of posts profiling Australian Internet identities.
- Summaries of policies being discussed at APNIC 49, and of the results, were published in eight languages. Email invitations to the Policy SIG were sent to all Members and a blog post preview was published.
- At APNIC 49, 242 people participated in SIG meetings, and 391 joined online.

Cooperation SIG

- The theme of the Cooperation SIG at APNIC 49 was 'Internet and Jurisdiction', with discussions on transnational legal frameworks, cybernorms and technical cybersecurity challenges.
- Bikram Shrestha was re-elected as Co-Chair.

Routing Security SIG

- 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.

NIR SIG

- Six NIRs presented at the NIR SIG at APNIC 49.

3D.2 Online participation

- Social media and blog posts on APNIC Academy's Virtual Training Program helped attract 1,806 attendees to eleven webinars.
- 589 new APNIC Academy users registered as a result of APNIC's Facebook posts (357), the APNIC Blog (154), and other APNIC social media activity (78 - Twitter and LinkedIn).
- 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.
- Promotion of Networking from Home (NFH) attracted 146 NFH email subscribers (in addition to the attendee statistics reported in 3C.1)
- Visitor numbers to apnic.net increased in April and have remained elevated, while time on site has decreased. The top five visitor economies were the United States, India, China, Japan and Australia. Twenty-five percent of visitors used a mobile device to access apnic.net.

	Total Sessions	Unique Users	Pages per session	Time on site
January	81,052	56,436	1.78	1:29
February	82,294	55,357	1.76	1:34
March	81,861	55,306	1.72	1:25
April	89,096	60,609	1.70	1:24
May	90,925	63,678	1.69	1:20
June	87,433	60,465	1.71	1:20
July	89,502	60,351	1.73	1:20
Total	602,163	412,202	1.73	1:24

Table 7: 2020 apnic.net website visits

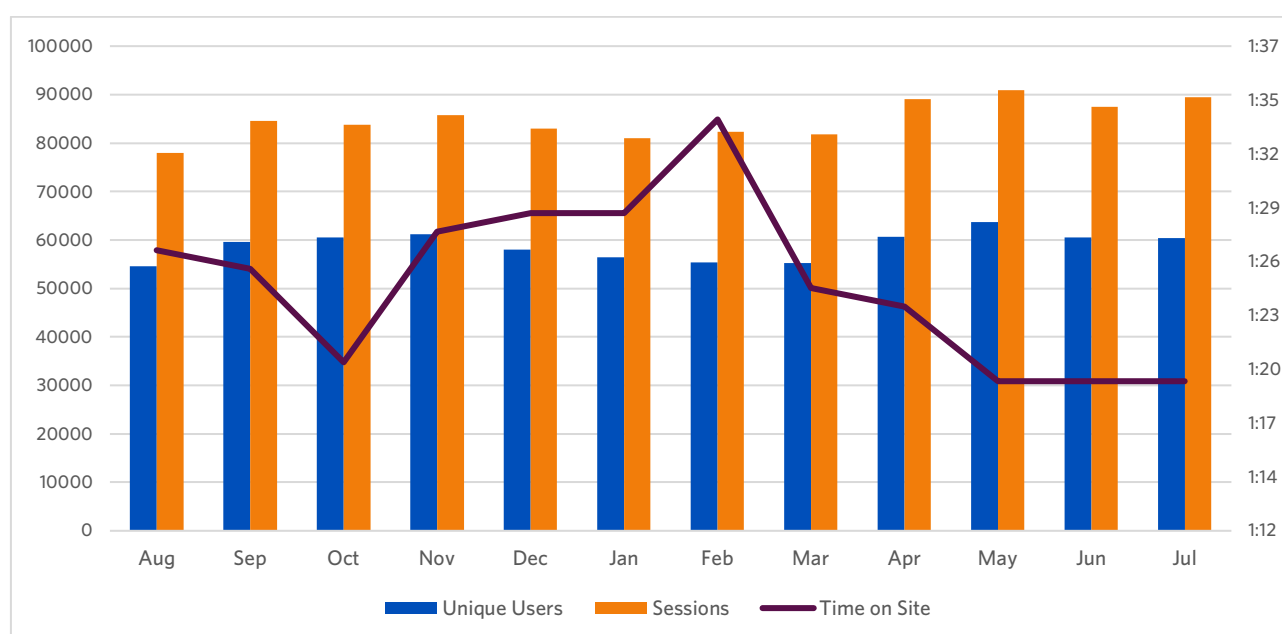


Figure 15: apnic.net website visits

Economy	Total Sessions	Unique Users
United States	70,966	55,736
India	70,172	46,224
China	52,141	36,850
Australia	39,361	22,458
Japan	38,828	28,199
Bangladesh	36,583	17,320
Hong Kong	36,078	10,497
Indonesia	20,570	11,806
Philippines	17,093	10,128
Brazil	10,923	10,350

Table 8: Top 10 economies - apnic.net website sessions and visitors

		2019 Mthly Avg	Jan	Feb	Mar	Apr	May	June	July	Total
Facebook	Reach	189,613	78,781	61,064	97,002	729,780	349,168	445,218	208,839	1,969,852
	Likes	N/A	29,307	29,487	29,583	29,686	29,861	30,022	30,030	30,030
Twitter	Followers	N/A	10,975	11,128	11,205	11,332	11,488	11,648	11,738	11,738
	Engage	3,891	4,165	6,770	3,824	5,897	6,364	7,424	5,212	39,656
YouTube	Views	3,296	2,430	7,433	3,561	3,508	3,077	3,779	2,612	26,400
	Hours	375.21	256.68	1,037.4	354.79	308.71	311.12	387.1	241.8	2,897.6
Slideshare	Views	12,975	12,633	14,710	13,429	13,479	12,539	12,119	11,610	90,519
LinkedIn	Reach	4,131	7,734	11,488	15,803	7,997	8,206	8,403	18,039	77,670
	Followers	N/A	4,354	4,454	4,545	4,632	4,730	4,825	4,930	4,930

Table 9: Social Media reach

3D.3 Encouraging newcomers

- A NextGen BoF was arranged for APRICOT 2020 (following the success of the first NextGen BoF at APNIC 48) with four speakers from network operators around the region. Despite promotion, attendance was disappointing.
- Sixty percent of APRICOT attendees were newcomers (336).
- Recorded 156 new blog subscribers, 856 new Twitter followers, 644 new LinkedIn followers, and 789 new people liked APNIC's Facebook page.

Success measures – 3D

Targets	Progress (to date)	On Target?
Attract 300 in-person participants at SIG sessions	242 participants	●
Achieve 800 online SIG participants	391 participants	●
Reach 1,250 subscribers to SIG mailing lists	1,261 subscribers	●
Reach 2.4 million blog views (all time)	2,276,343 views	●
Achieve 4,000 remote conference session views	2,498 views	●
Achieve attendance of 1,000 conference delegates	563 attendees	●
Reach 11,900 Twitter followers	11,738 followers	●
Achieve Facebook reach of 2 million	1,969,852 reach	●
Attract 350 newcomers to APNIC conferences	336 newcomers	●
Attract 75 new blog email subscribers	156 new subscribers	●

Investments

3D.4 Community diversity

Monitoring and improving diversity (including gender, age, language and dis/abilities) of community participation in APNIC events and activities.

Objectives:

- Gather demographics of conferences and other APNIC activities.
- Support increased diversity through APNIC fellowship, conference and community activities.
- Review the APNIC website to identify translation opportunities and accessibility improvements.

Status:

- Source data is being consolidated, producing a single dataset for future reporting.
- New demographic questions were included in the 2020 APNIC Survey.

3E APNIC Academy

Operations

3E.1 Curriculum development

- Review of current training materials, standardized outlines for existing courses, and identification of new modules to enhance current courses (based on workshop feedback and industry trends) are underway.
- Work started in May on a new Network Management and Monitoring course (with industry subject matter experts).
- Work started in July to redevelop the Routing Basics course on the APNIC Academy (with industry subject matter experts). The course is planned for release at APNIC 50.
- New routing labs were added to the APNIC Academy in OSPF, IS-IS, BGP, IPSec and Segment Routing.
- The new course catalogue and learning pathways guide were added to the APNIC Academy.

3E.2 Face-to-Face training

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

January-February	Face-to-Face
Courses (by topic)	10 courses/workshops
Locations	7 cities / 6 economies
Training Days	25
Student-days/hours	658 student days
Students	244

Table 10: Face-to-Face training

3E.3 Online training

- Training delivery has focused on live online training while COVID-19 restrictions remain in place.
- A program of live online tutorials, in three different times zones (East Asia/South East Asia, South Asia, Oceania), has been established up to September 2020, focusing on RPKI, Network Security, DNS/DNSSEC, Advanced Routing, and IPv6 Deployment.
- Live online training was delivered for:
 - PacNOG 26
 - PhNOG Virtual 2020
 - Pakistan Telecommunication Authority
 - The Institute of Electronics Engineers of the Philippines
 - Tencent (China)

	APNIC Live Online Training
Courses (by topic)	16 courses
Training days	15.25
Student-days/hours	613 student days
Students	1,190

Table 11: Live online training delivery

	APNIC Academy
Courses (by topic)	7 courses / 1,702 certs / 1,931 hours
Virtual Labs	2,982 labs launched; 2,619 hours
Webinars	11 webinars / 1,806 attendees
Students	5,654 active users from 9,101 users
Locations	37 economies
YouTube Training Channel	15,215 views / 284 new subscribers

Table 12: APNIC Academy training

3E.4 Community Trainers

- Engaged four Community Trainers (CTs) at three face-face events (two at bdNOG 11, one at MMNOG, and one at SANOG 35) during January and February.
- Completed a review of the contracted CTs based on feedback from participants and lead trainers. Contracts were renewed for 18 CTs in May.
- Additional CT support is being provided through improved onboarding, including help with presentation skills, and access to collaboration tools and additional content.

3E.5 Technical assistance

- IXPs:
 - Fiji IX: Helped design the IX upgrade (route server, IXP Manager, redundant switches, looking glass and IX website).

- VNIX: Helped develop a route server filtering policy template.
- HKIX: Helped validate ROV deployment plan and configurations.
- MyIX: Helped plan ROV deployment.
- Maldives IX: Operating principles and high-level design shared.
- IPv6:
 - Maldives (Focus Infocomm): Completed high-level address plan based on current services and plans, and gave advice on deployment preparations.

3E.6 RPKI awareness and deployment support

- In partnership with JPNIC, APNIC hosted the RPKI Deployathon at APRICOT 2020, with 40 participants.
- Current ongoing activities include:
 - ROA outreach in Australia, Maldives, Mongolia, Myanmar and Pakistan.
 - ROA/ROV deployment support in Australia, Mongolia, Tonga and Sri Lanka.
- APNIC delivered eight RPKI-focused training events (two face-to-face and six online tutorials).
- Published 19 RPKI-tagged posts on the APNIC Blog.
- RPKI adoption has increased in 2020. Members with ROAs have increased from 27.2% in January to 39.6% in July.

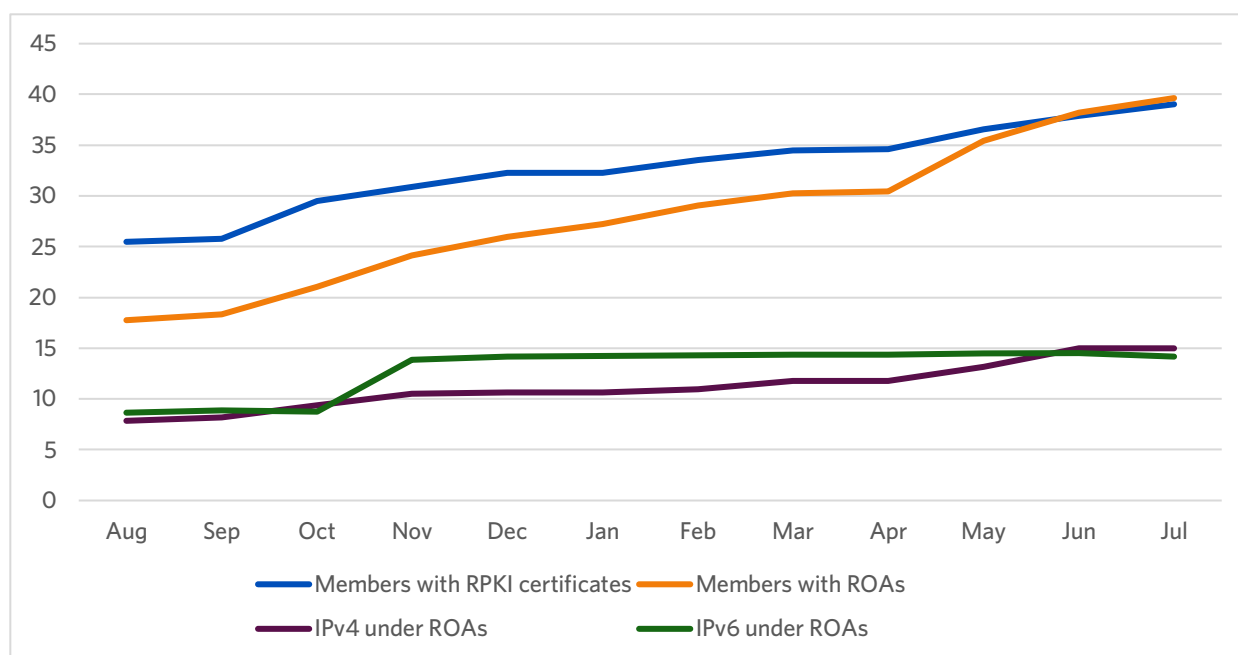


Figure 16: RPKI usage

3E.7 IPv6 awareness and deployment support

- Delivered three training sessions on IPv6 deployment at bdNOG 11, SANOG 35, and PhNOG 2020 (Feb).
- Published 33 IPv6-tagged posts on the APNIC Blog.
- Published new IPv6 deployment success stories on 3BB (Thailand), Mytel (Myanmar) and Worldlink (Nepal), bringing the total number of IPv6 deployment stories on the APNIC website to 38.

Success measures – 3E

Targets	Progress (to date)	On Target?
Add Bengali language to APNIC Academy online platform	In progress	●
Convert three old online training courses to new video-based format	Two courses in progress	●
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 new virtual labs 1 new IPv6 lab (Stateless NAT64) NMM course in progress	●
Conduct 60+ face-to-face training sessions equitably across the four sub-regions	Pre-COVID: 10 F2F sessions in 3 sub-regions During COVID: 16 live online training sessions plus 8 live webinars (4 sub-regions)	●
Recruit and maintain a pool of 25 qualified Community Trainers from four sub-regions	18 Community Trainers	●
Start conducting structured technical assistance over the APNIC Academy online platform	APNIC Academy platform TA feature in development	●
Publish four IPv6 deployment case studies	3 published	●

Investments

3E.8 APNIC Academy development

Developing the [APNIC Academy](#) as a cohesive learning environment integrating blended face-to-face and online training services.

Objectives:

- Integrate various training administration systems (for example, registration, calendar and training wiki) into APNIC Academy.
- Establish an online technical assistance platform that connect Members with experts in the Internet community.
- Increase multilingual support by adding more languages to more courses, and engaging community reviewers.
- Develop a new digital badging and recognition system.

Status:

- Academy Product Team established, including recruitment of a new Senior Full Stack Developer.
- New course catalogue and learning pathways guide added to the APNIC Academy.
- Course outline pages migrated from training.apnic.net to the APNIC Academy.

- Additional language support for Bengali underway.
- Collaboration in development of online participation platform (see 1B.2)

3F Internet Infrastructure Deployment

Operations

3F.1 Internet infrastructure deployment

- Donated used switches to Fiji IXP as part of its upgrade, to Lahore IX to support its set up, and to BKNIX in Chiang Mai.
- Provided advice on IXP design and operation to the Maldives IXP through MoCST, Maldives.
- Helped develop a route server filtering policy template for VNIX.
- Helped with technical validation of ROV deployment at MyIX and HKIX.

3F.2 Honeynet deployment

- The backend systems serving the Community Honeynet were upgraded and enhanced.
- New partners from Hong Kong, Bangladesh and Japan joined the project.

Success measures – 3F

Targets	Progress (to date)	On Target?
Support deployment of at least two new or upgraded IXPs	Three IXPs in progress	●
Support deployment of at least six new rootserver instances at IXPs or other networks	Two instances in progress	●
Support at least six IXPs to deploy RPKI on their route servers	Two IXPs deploying RPKI/ROV	●
Deploy at least four RIPE Atlas anchors at various networks	No new deployments	●
Establish five new Community Honeynet partners	Three new partners	●

Investments

3F.3 M-root anycast instance deployment

Establishing a new partnership with the WIDE Project and JPRS to support anycast deployment of M-root.

Objectives:

- Help streamline M-root deployment and operations by improving process and automation.

Status:

- MoU was signed. Preparations for the first deployments in Brisbane and Viet Nam are in progress.

3F.4 Security threat sharing platform

Extending the APNIC Community Honeynet as a platform for APNIC Members to share cybersecurity threat information so they can take necessary action.

Objectives:

- Create platform for APNIC Members to share threat information and develop a trusted community culture.
- Encourage development of analysis and incident response capabilities among Members.

Status:

- Started to develop plans, identify partners, tools, and current state of sharing in the community.

4 Information



Operations

4A Information Products

4A.1 APNIC Blog

	Jan	Feb	Mar	Apr	May	Jun	Jul	YTD	All time
Views	50,420	51,231	58,448	56,343	68,882	67,795	61,627	414,746	2,276,343
Posts	35	28	30	26	25	27	39	210	2,215

Table 13: APNIC Blog activity

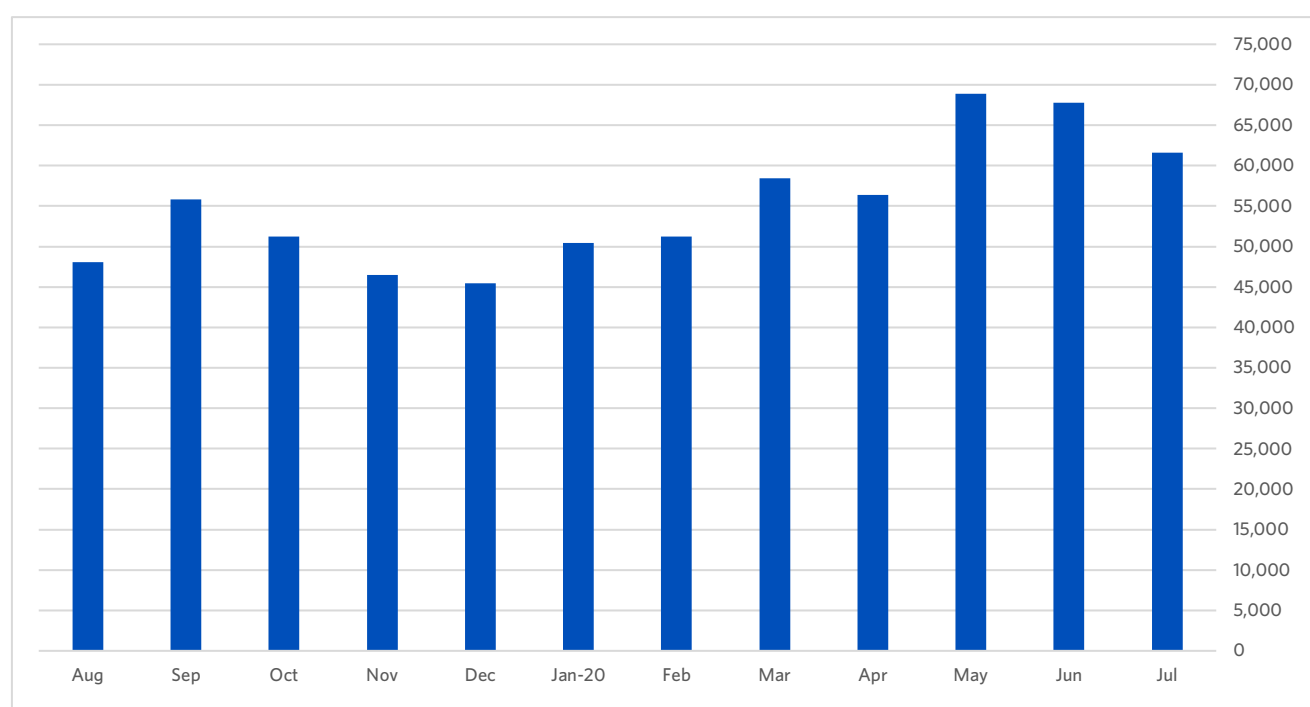


Figure 17: APNIC Blog views

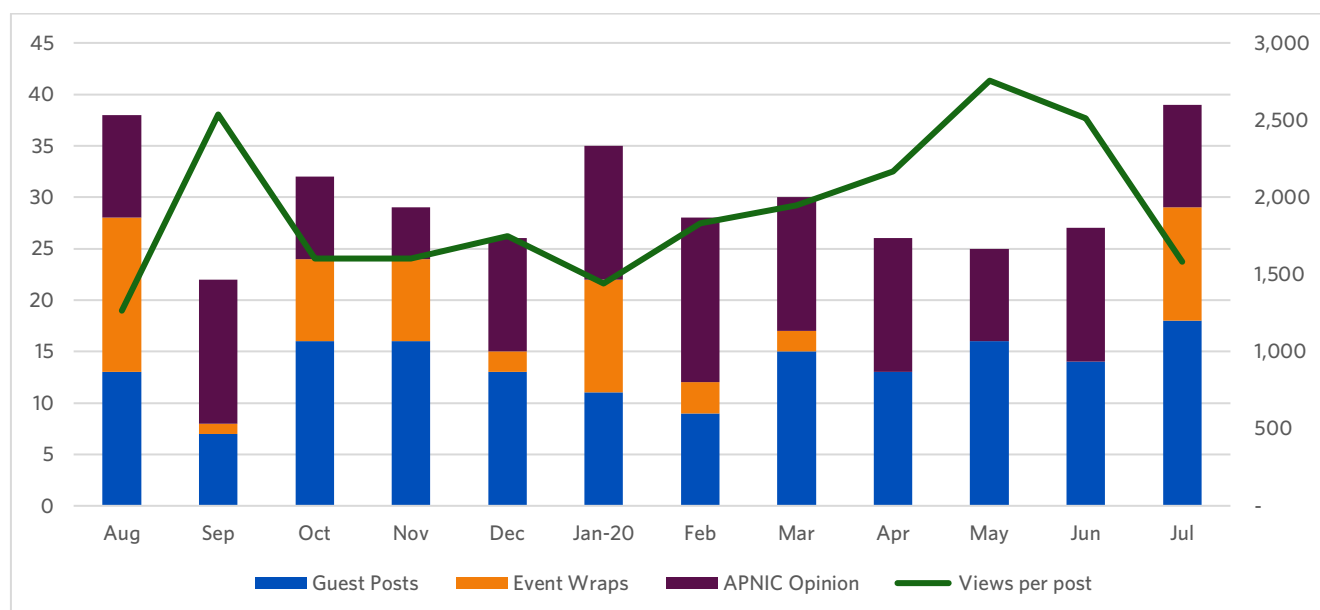


Figure 18: APNIC Blog posts

- The Blog averaged 59,249 views per month, a 23% increase on 2019's monthly average of 48,026. The Blog passed the milestone of 2 million views (all-time) in March.
- There have been 96 Guest Posts in 2020, representing 52% of total opinion posts (an increase on 2019's 49%).
- While the number of opinion posts has remained steady, the number of Event Wraps has decreased in 2020 due to the cancellation/postponement of many events .
- Popular posts included:
 - A Guest Post on [changing attitudes to IPv6](#) by Avery Pennarun.
 - A Guest Post on [network topology for satellite systems](#) by Debopam Bhattacharjee.
 - Jun Murai's [announcement](#) regarding the future of 43/8.
 - Geoff Huston's [review of BGP](#) in 2019.
 - A Guest Post on [IPv6 private addressing](#) by Mark Smith.

4A.2 Information product management

- UX/UI improvements were made to all Information products, based on user data and feedback (ongoing activity).
- Internet Directory
 - New Information Architecture under development.
 - A new widget to offer a snapshot of an economy under development.
 - Interface improvements for consistency and usability.
- DASH
 - Finalised feature set for DASH v1.0: data for individual IP addresses and prefixes, more types of attacks rather than just SSH brute force, information about destination ports, additional insights, welcome tour and redesigned welcome page.
 - Preparing User Acceptance Testing of v1.0.

- A feature for detecting potential BGP hijacks, plus an alert feature, were proposed and validated. Implementation of these features is postponed for future release.
- NetOX
 - Welcome page was designed and currently being implemented for desktop, tablet and mobile devices.
 - Completed translation into Chinese (Traditional and Simplified) as part of a localization pilot. Implemented mechanism for UI language selection.

Success measures – 4A

Targets	Progress (to date)	On Target?
Reach 2.4 million blog views (all time)	2,276,343 views	●
Average 50,000 blog views per month	59,249/month	●
Maintain blog Guest Post ratio between 45 to 50%	52% Guest Posts	●
Achieve a net promoter score higher than 70 for Internet Directory, NetOx and DASH	64, 80 and 100 respectively (in the last Q)	●
Achieve a usability score higher than 4.5 for Internet Directory, NetOx and DASH	4.7, 4.8 and 5 respectively (in the last Q)	●
Achieve at least 30% returning users to the Internet Directory, NetOX and DASH	10.41%, 20.65% and 19.44% respectively (in the last Q)	●
Participation in user research activities of at least eight users per product during the year	14, 0 and 9 respectively	●

4B Research and Analysis

Operations

4B.1 Conducting research and measurements

- 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.
- An RPKI ROV monitor has been developed, looking at progressive deployment of ROV filters in the network.
- Current DNS research includes analysis of the handling of large DNS responses, adoption of DOH, and DNS query patterns.

4B.2 Sharing research outcomes

- Published 19 blog articles, including research findings, analysis of trust infrastructure, and a commentary on new Internet technologies.
- Delivered 19 presentations at events in the first half of 2020 (all online since February).

4B.3 Cooperative research

- Entered a cooperative research program with ISOC in support of the MANRS, providing a feed of routing data.
- Work on measurement framework for the Identifier Health Indicators program, as well as collaborative measurements on aspects of the DNS and DNSSEC, as part of cooperative research agreement with ICANN.

Success measures – 4B

Targets	Progress (to date)	On Target?
Twelve research articles and reports published	17 published	●
Ten research presentations delivered	19 presentations	●
Two presentations to Policy SIG meetings	1 presentation	●

5 Capability



Operations

5A Internal Technical Infrastructure

5A.1 Information architecture and management

- For internal systems integration, six internal APIs have been specified using the OpenAPI standard, automatically translated to developer documentation and code libraries to improve developer productivity.
- Requirements for inter-system dependency tracking have been included in the F5 replacement project.

5A.2 Network and infrastructure operations

- Reviewed costs of existing transit and peering connectivity in Brisbane. A new gigabit IX peering connection was established with EdgelX Australia from NextDC B1.
- The APNIC network was deemed MANRS-compliant after an ISOC evaluation. APNIC is now an official MANRS participant.
- Office Wi-Fi was upgraded to support the Wi-Fi 6 standard, providing better coverage.

5A.3 System and platform operations

- A Google Cloud Platform (GCP) facility was established with a Google Kubernetes (GKE) cluster in Sydney. RDAP was deployed into this cluster 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 is being analysed to determine best cost options for multiple RDAP deployments. Individual NIR RDAP services were also deployed on the GCP.
- The deprecation of TLSv1.0 and TLSv1.1 was completed on 6 June across all APNIC 'browser-based' services, with API/machine-accessed services to be completed in August 2020. This was announced 30 days prior and a blog post was published.
- The Hardware Security Module (HSM) was reconfigured to create a separate key for the RPKI ASO ROA (see 2B.3).
- Work is in progress to consolidate and upgrade the registry backend database (MySQL).
- Cloudflare was reconfigured to use heavy caching of APNIC public websites to improve response and availability.

5A.4 CSIRT operations

- As part of ISMS for ISO 27001 preparations, internal Acceptable Use Policy (AUP) and Bring Your Own Device (BYOD) policies were updated.
- A Vulnerability Reporting Program was announced in July, along with a new GPG key for the CSIRT email (csirt@apnic.net).
- External penetration testing was completed and detected no high severity vulnerabilities. Mitigation tasks have been assigned to the responsible teams.

- Regular security awareness training for all staff continued during the COVID-19 work from home period.
- Audits of administrator access accounts, and of current technical controls against CIS Controls, were conducted in June.
- Seven security advice documents were issued internally.

5A.5 Enterprise application management

- Litmos was implemented for tracking of staff compliance training and policy compliance.
- All staff and Community Trainers were migrated to OKTA authentication for web application access.
- S/MIME Digital Signing and email encryption is now implemented using an external CA for better efficiency.
- A Legacy Application Roadmap is being developed to move internal applications away from certificate-based authentication to modern Open ID Connect standards.

Success measures – 5A

Targets	Progress (to date)	On Target?
Develop dependency management framework using APIs to map system dependencies	Framework complete 6 APIs defined	●
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	Scheduled Q4	●
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	90% complete	●
Roadmap completed for removal of legacy data systems	In progress	●

Investments

5A.6 Network presence at Asia Pacific Internet hubs

Improving APNIC online service performance with better network presence and interconnection in the region.

Objectives:

- Review options for improving performance of APNIC services by direct peering at co-located Internet hub locations.
- Make deployment of APNIC's critical services more effective.

Status:

- A new direct remote connection from Brisbane to the Equinix IX in Singapore was established, resulting in direct peering and reduced latency with networks in South and South East Asia.

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

5B Finance and Business Services

Operations

5B.1 Knowledge management

- The staff intranet is being transferred from Foswiki to Confluence.

5B.2 Financial services

- The implementation of the new PBCS financial reporting tool was completed in July. Financial reports and forecasting are being 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.

5B.3 Business services

- An internal audit of APNIC processes outlined in the Quality Management System is in progress ahead of the ISO9001:2016 external audit on 18 August 2020.
- A new travel request process integrating with External Relations functions has been developed in Salesforce for a Q4 implementation.
- A COVID-19 BCP response team was established in January to oversee APNIC staff travel, office operations, and APRICOT 2020. A staff 'work from home' plan was implemented in March. The COVID-19 situation is reviewed weekly and policies adjusted as needed.

Success measures – 5B

Targets	Progress (to date)	On Target?
Knowledge management tools identified, and implementation project plan developed	In progress	●
Successful audit of APNIC's annual financial accounts	Completed	●
Successful completion of annual ISO quality management compliance audit	Scheduled Q3	●
Successful implementation of the new PBCS financial reporting tool and framework	Completed	●
Quarterly BCP scenario testing undertaken	2/2 tests completed	●

Investments

5B.4 Business intelligence

Establishing a comprehensive business intelligence facility that integrates data from a range of systems to produce better analysis and consistent reporting, for internal use and for reporting to EC and members.

Objectives:

- Implement a data warehouse incorporating customer and registration data, providing analysable structures suitable for use with tools such as Tableau.
- Migrate recurring reporting to the new system.

Status:

- A data warehousing system was developed for production deployment in August 2020.
- A 'data mart' system is under development, using selected business processes, under the Business Event Analysis and Modelling (BEAM) methodology.

5C Employee Experience

Operations

5C.1 Organizational development

- During 2020, there is a focus on increasing the use of 'agile' methods by both technical and non-technical teams. Training in agile methods of work planning and prioritization is underway, and agile tools are available to all staff.

5C.2 Physical work environment management

- COVID-19 BCP response team was established (5B.3)
- The Security surveillance system upgrade is scheduled to be completed by the end of August.







5C.3 Talent attraction and retention

- The following roles have been filled:
 - Senior DevOps Engineer
 - Systems Administrator (Internal Services)
 - Senior Full Stack Developer
 - Senior Digital Communications Officer
 - Network Analyst (x2)
 - Salesforce Developer / Admin
 - Senior Advisor – Strategic Engagement
 - Senior Network Analyst/Technical Trainer
 - Salesforce Developer/Administrator
- All members of the APNIC executive, management team and specialists are participating in a virtual Leadership Development Program between July and November.
- Webinars on virtual presentation skills were provided to staff in preparation for APNIC 50.

5C.4 Policies and benefits management

- Policies are under review to accommodate legislative changes and organizational requirements. New policies to be implemented in Q3 are the Whistle-blower Policy and Gifts and Benefits Policy.

Success measures – 5C

Targets	Progress (to date)	On Target?
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	In progress	
Building surveillance system upgraded	In progress	
Staff turnover rate is within acceptable benchmarks of between 5 and 15%	2.3% turnover	
Professional development budget is fully spent, and addresses needs identified in performance reviews wherever possible	72 % spent	
Identify workplace policies that are not aligned with best practice in Australia and provide recommendations for 2021 budget	In progress	

Investments

5C.5 Product management

Establishing two new product teams (with assignments of existing staff), extending APNIC's product management framework to other areas of the organization.

Objectives:

- Establish product teams for the APNIC Academy online platform and enterprise applications.
- Provide training and coaching for product managers and teams.

Status:

- Product teams for Academy and Enterprise systems were established in Q1.
- Product Management training was completed in Q1. Ongoing coaching is provided by both external consultants and internal Product Management coach.

5D Governance

Operations


5D.1 Executive Council (EC) support

- Sumon Ahmed Sabir and Achie Atienza were elected to the APNIC EC for the first time at APNIC 49, with Kam Sze Yeung being re-elected to the EC for a third term.
- Sumon and Achie participated in the EC induction program in early April.
- The first EC meeting of the year was held in Melbourne on 18 and 21 February and followed by teleconferences on 17 March, 4 May and 22-24 June 2020.

5D.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. The new register included risks and ratings identified in the strategic planning workshops in 2019 and will continue to be reviewed at each EC meeting.
- An updated APNIC Privacy Statement was published on 31 March 2020. Staff were provided with privacy training on 18 March and 2 April to ensure awareness privacy law obligations. A separate Privacy Statement for the APNIC Foundation was published on 26 March.
- Crisis management and communication training was provided to all members of the Leadership Team in March.

Success measures – 5D

Targets	Progress (to date)	On Target?
Revised Strategic Risk Register fully implemented	In progress	

Appendix A: Engagement Summary

Community engagement summary

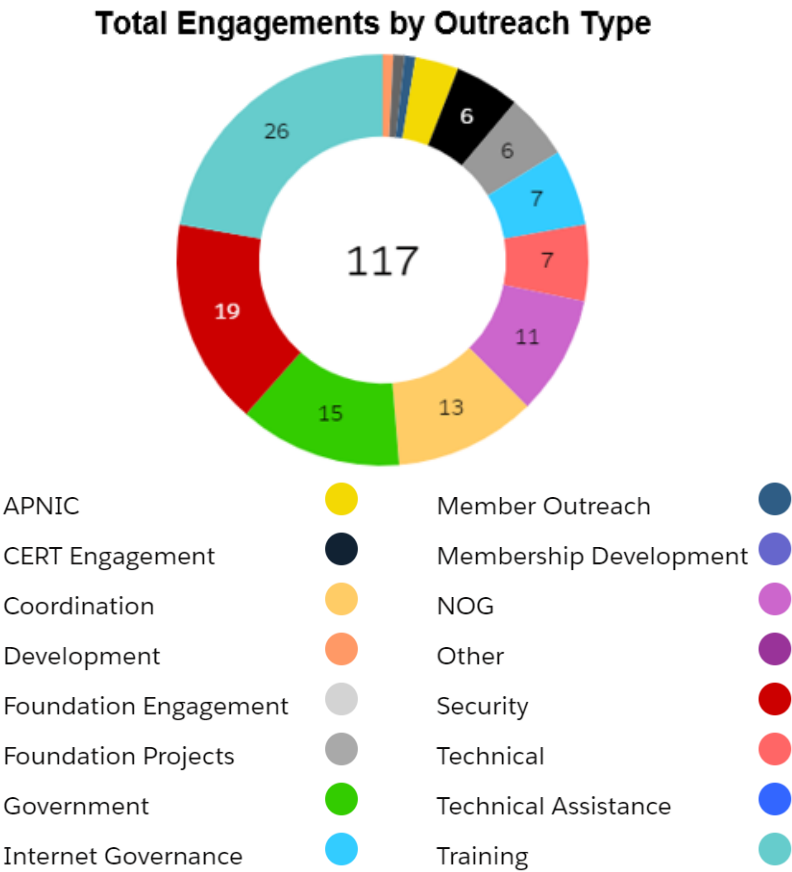


Figure 19: Engagements summary by type

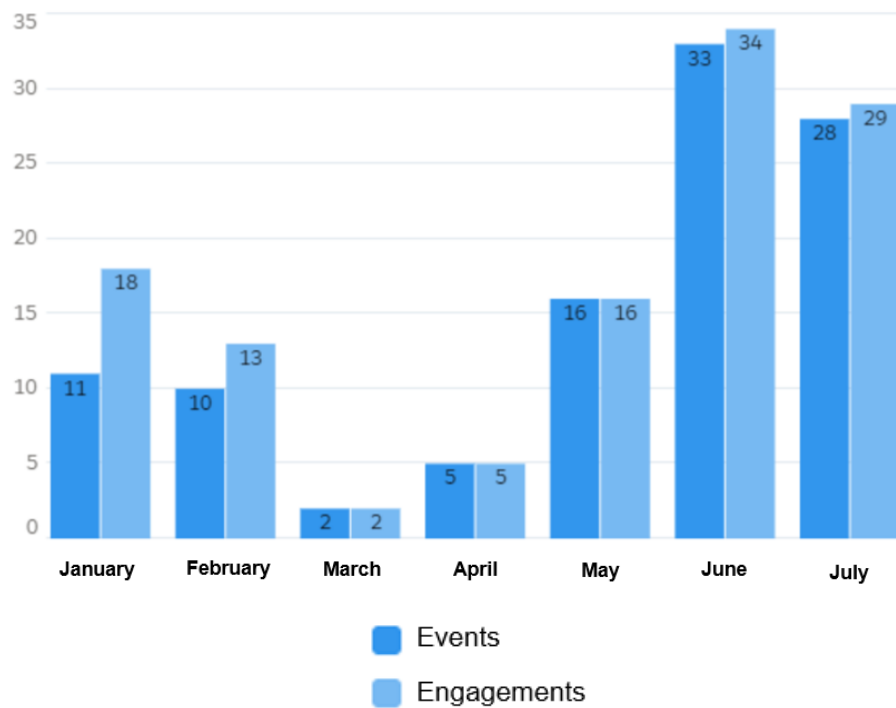


Figure 20: Engagement summary by month

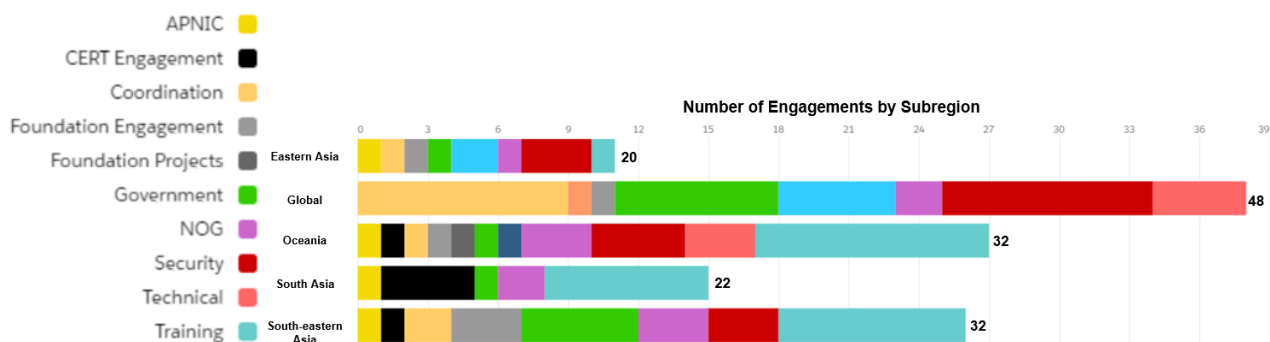


Figure 21: Engagement summary by subregion/type

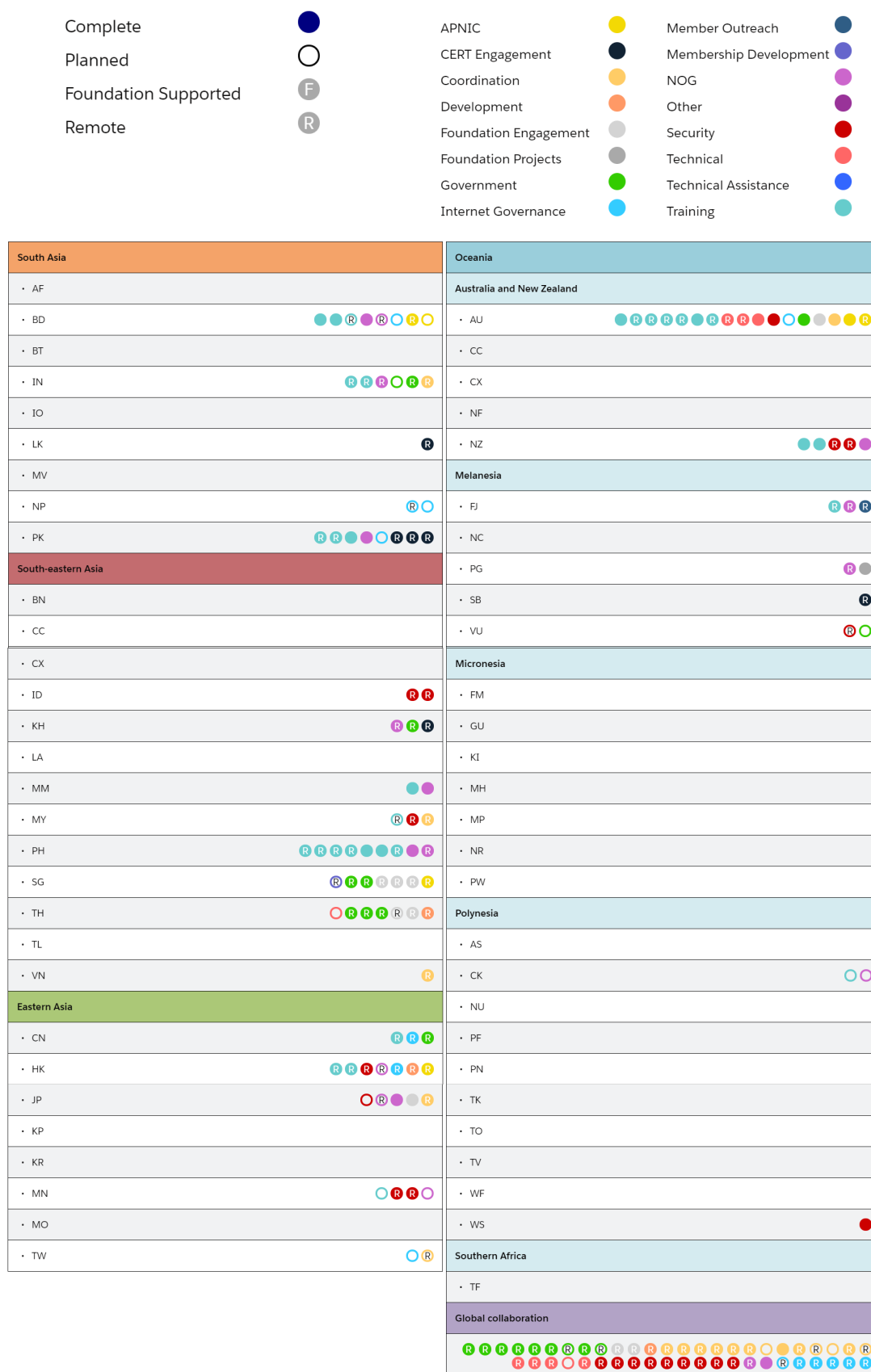
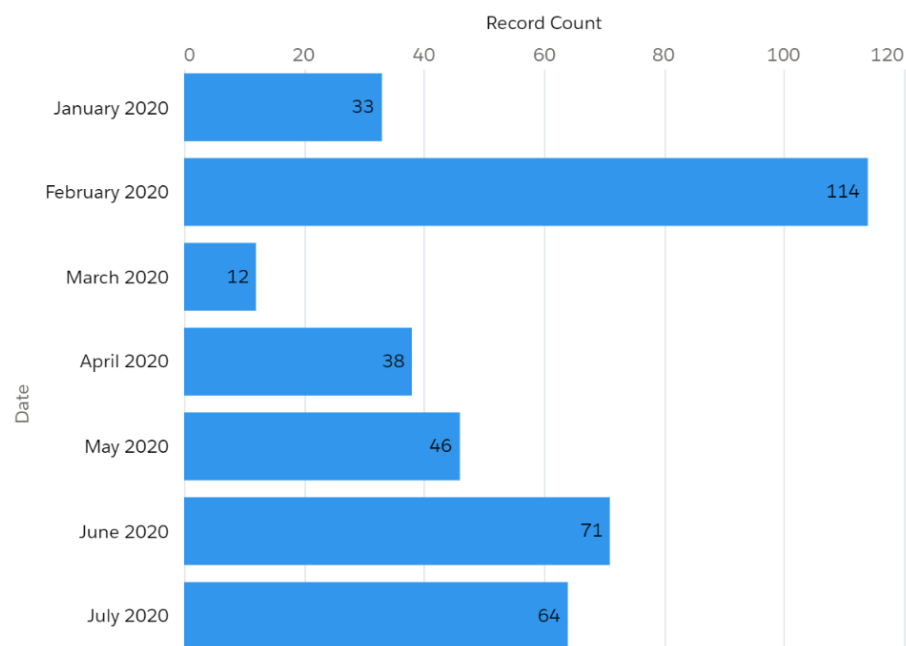


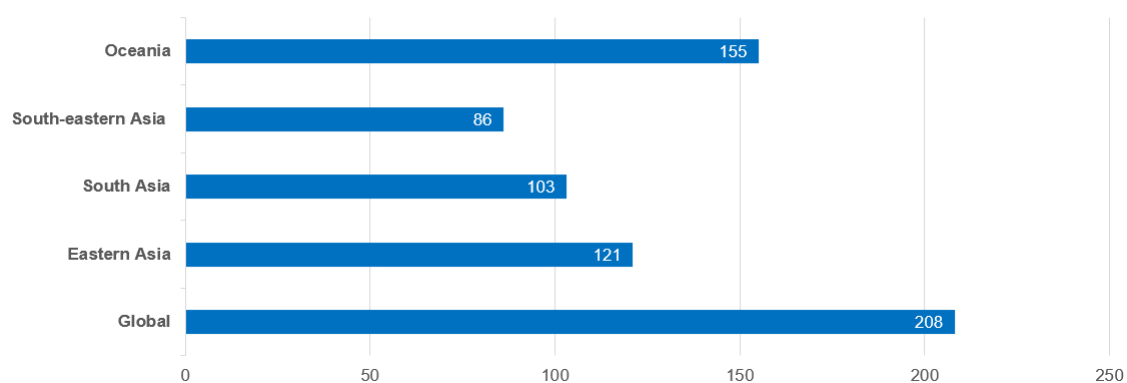
Figure 22: Engagement detail by economy

Total Logged Touchpoints

by Month



Contacts in Touchpoints by Subregion

**Figure 23: Touchpoints summary**

Touchpoints are interactions by APNIC staff with a contact (APNIC Member or Non-Member), usually during an event.

Event attended in 2020 (to date)

Month	Event name	Economy	F2F or Virtual
1	Foundation meetings - Tokyo Jan 2020	JP	F2F
1	Securing Internet Routing Workshop	AU	F2F
1	3rd ACEMS Workshop on Challenges of Data and Control of Networks (ACDCN)	AU	F2F
1	MMIX Peering Forum & MMNOG 2020	MM	F2F
1	JANOG 45	JP	F2F
1	SANOG 35	PK	F2F
1	NZNOG 2020	NZ	F2F
1	BDNOG11	BD	F2F
1	PNGTRAINING WS 15 - DNS & DNSSEC	PG	F2F
1	CERT Support for Pakistan Telecom Authority	PK	Virtual
1	Intro to CSIRTs with LEARN	LK	Virtual
2	NANOG 78	US	F2F
2	PhNOG 2020	PH	F2F
2	2020 Global Cybersecurity Capacity Building Conference	AU	F2F
2	2020 Australasian Aid Conference	AU	F2F
2	APRICOT 2020	AU	F2F
2	Cyber Safety Pasifika - Content Review Workshop	AU	F2F
2	NRO ECG	NL	F2F
2	Samoa IT Association (SITA) IT Security Seminar	WS	F2F
2	APTLD77 Members Meeting & 2020 AGM	AU	F2F
2	Honeypot Project for HKPF	HK	Virtual
3	ICANN 67	MX	Virtual
3	IETF 107	CA	Virtual
4	GFCE-V Meeting 2020	NL	Virtual

4	Securing Internet Routing tutorial	AU	Virtual
4	Securing Internet Routing tutorial	AU	Virtual
4	Cambodia CERT Security Talk	KH	Virtual
4	ISOC-APNIC Tech Talk on RPKI 101	AU	Virtual
5	APT WTS20-2	TH	Virtual
5	Securing Internet Routing tutorial	AU	Virtual
5	EU ATT&CK Community Workshop	BE	Virtual
5	Infosec Jupyterthon 2020	US	Virtual
5	NRO EC Virtual Meeting	MY	Virtual
5	Panel Discussion on CERT/CSIRT	ID	Virtual
5	Suricata IDS / NSM Developer Webminar	US	Virtual
5	APT Web Dialogue Series	TH	Virtual
5	LACNIC 33	CO	Virtual
5	RIPE 80	DE	Virtual
5	FIRST Cyber Threat Intelligence Summit (CTI)	CH	Virtual
5	Foundation Board Meeting 2020	SG	Virtual
5	Suricata IDS Tutorial with MYREN Community	MY	Virtual
5	Securing Internet Routing tutorial	PH	Virtual
5	Securing Internet Routing tutorial	IN	Virtual
5	Security Analysis Tutorial for Solomon Island Government Data Centre Team	SB	Virtual
6	NANOG 79	US	Virtual
6	ITU Telecommunication Development Advisory Group Meeting	CH	Virtual
6	Global Stakeholders Dialogue on the Future of the Internet	FR	Virtual
6	Introduction to IPv6 Webinar	PH	Virtual
6	AVPN Conference 2020	SG	Virtual
6	Advanced Routing with Multihoming Online Workshop	PK	Virtual

6	ITU 2020 Council Meeting	CH	Virtual
6	I-star Leaders Meeting	US	Virtual
6	DNS OARC 32a Workshop	FR	Virtual
6	PITA Technical and Business Session	SB	Virtual
6	PacSON 2020 Virtual Session	NZ	Virtual
6	Securing Internet Routing tutorial	AU	Virtual
6	UNIDIR: Implementing Cyber Norms, National Experiences Good Practices	CH	Virtual
6	RSCG and Legal Team Joint Meeting	NL	Virtual
6	2nd MAG Meeting 2020	CH	Virtual
6	IX 2020 - Internet Security & Mitigation of Risk Webinar	MN	Virtual
6	Interim Meeting of the APT-WTSA20 Working Group 3	TH	Virtual
6	ARIN 45	US	Virtual
6	ROW #9	US	Virtual
6	PNGNOG Meet Up	PG	Virtual
6	FIRST.org Special Interest Groups (SIGs) Meetings	US	Virtual
6	ICANN 68	MY	Virtual
6	WSIS Forum 2020	CH	Virtual
6	HKIGF 2020	HK	Virtual
6	ISOC ICOMM Virtual Event (MANRS)	US	Virtual
6	38th JPOPM	JP	Virtual
6	Network Security tutorial	PH	Virtual
6	AFRINIC Webinar 'Internet Infrastructure Support in Times of Crisis'	MU	Virtual
6	UN INCB - Experts on Drug Trafficking	AT	Virtual
6	PACNOG 26	FJ	Virtual
6	ReversingLabs 2020	US	Virtual
6	Networking from Home (South East Asia)	SG	Virtual

6	Networking from Home (South Asia)	BD	Virtual
7	UNESCAP Webinar: Bringing affordable and reliable Internet to all (IXP)	TH	Virtual
7	PacSON Follow Up Virtual Session	NZ	Virtual
7	VNNIC-APNIC Engagement Series	VN	Virtual
7	Securing Internet Routing online tutorial	FJ	Virtual
7	Network Security tutorial	PK	Virtual
7	Broadband India Forum	IN	Virtual
7	UN High Level Political Forum on Sustainable Development 2020	US	Virtual
7	Network Security tutorial	AU	Virtual
7	PHNOG Virtual 2020	PH	Virtual
7	APT WTS20-3	CN	Virtual
7	EU Cyber Direct - Closing the Gap	BE	Virtual
7	UCEnet / LEA Engagement	NL	Virtual
7	NFH - East Asia	HK	Virtual
7	Fair Tech Forum	SG	Virtual
7	SANS DFIR Summit	US	Virtual
7	PhNOG DNSSEC tutorial	PH	Virtual
7	Security Engagement with PK community	PK	Virtual
7	IDNOG 07	ID	Virtual
7	ITU-T Study Group 13 Virtual Meeting	CH	Virtual
7	IAA Webinar: Life Under Lockdown: How to stop heists, hijacks, and hostages	AU	Virtual
7	ITU-T Study Group 11 Virtual Meeting	CH	Virtual
7	DNS/DNSSEC tutorial	PH	Virtual
7	Digital Infrastructure: Building Our Digital World	US	Virtual
7	Honeynet Threat Sharing Platform Webinar	ID	Virtual

7	China IGF 2020	CN	Virtual
7	IPv6 tutorial	CN	Virtual
7	APT WTDC21-1	TH	Virtual
7	IETF 108	ES	Virtual
7	RightsCon Online	US	Virtual
7	Log Analysis Tutorial for Security Analysts	MN	Virtual
7	DNS/DNSSEC tutorial (part 1)	IN	Virtual

Table 14: Events attended

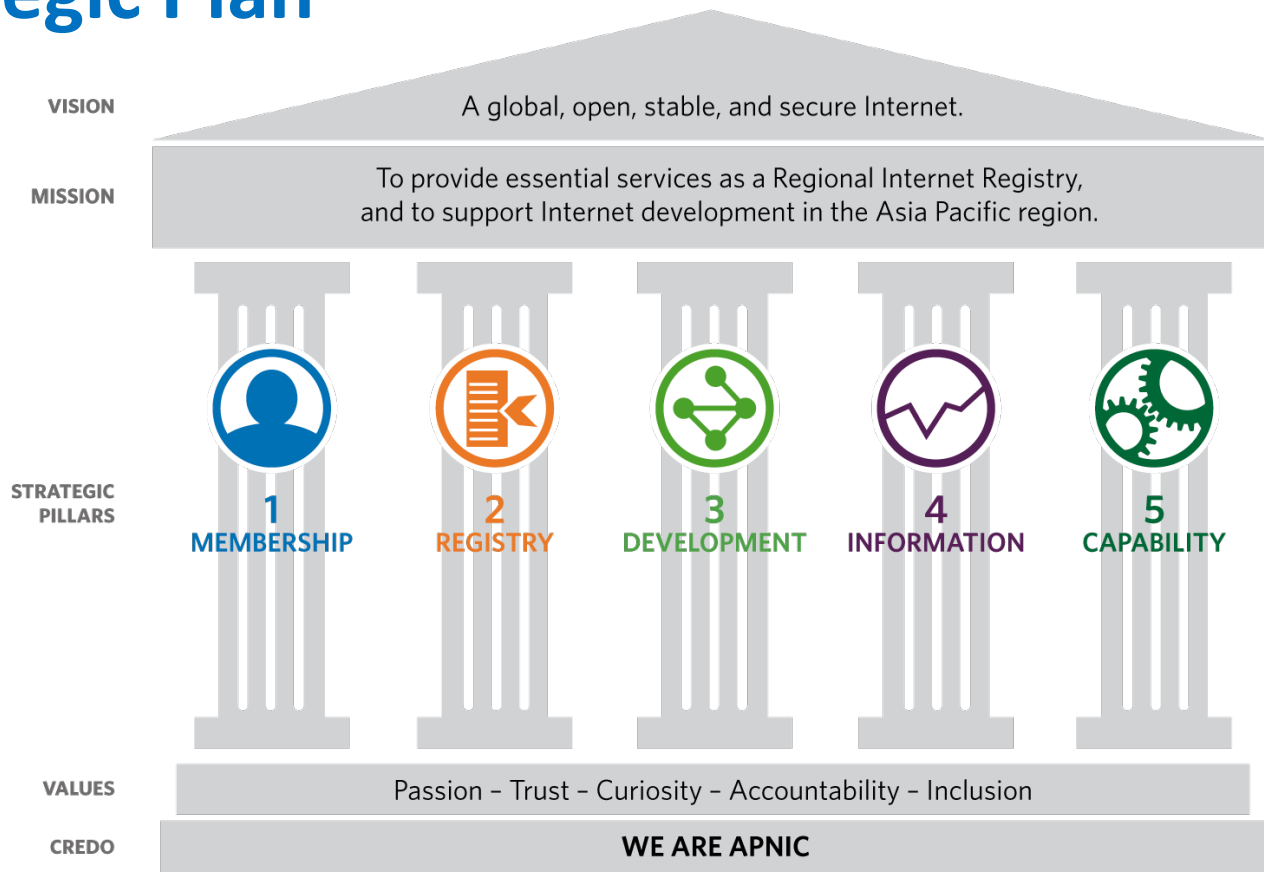
APNIC Secretariat Report

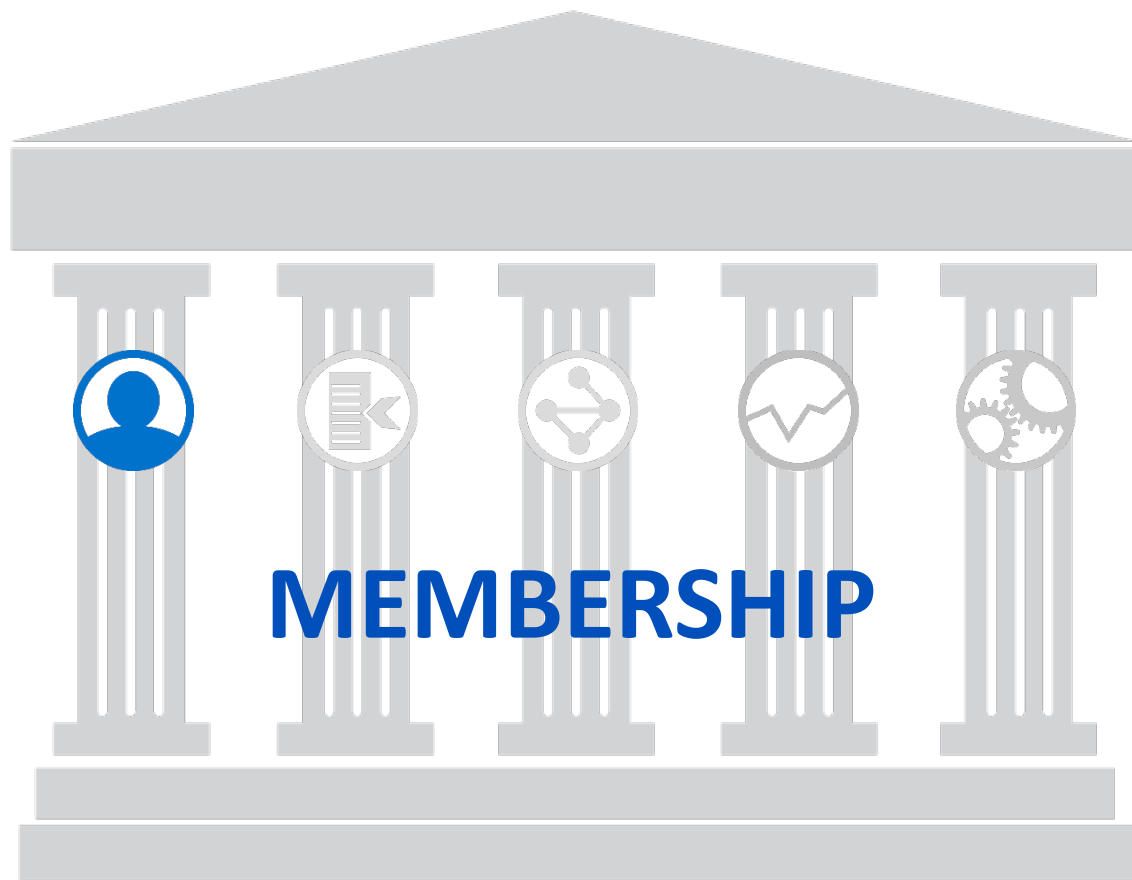
EC meeting

4 September 2020

Online

Strategic Plan

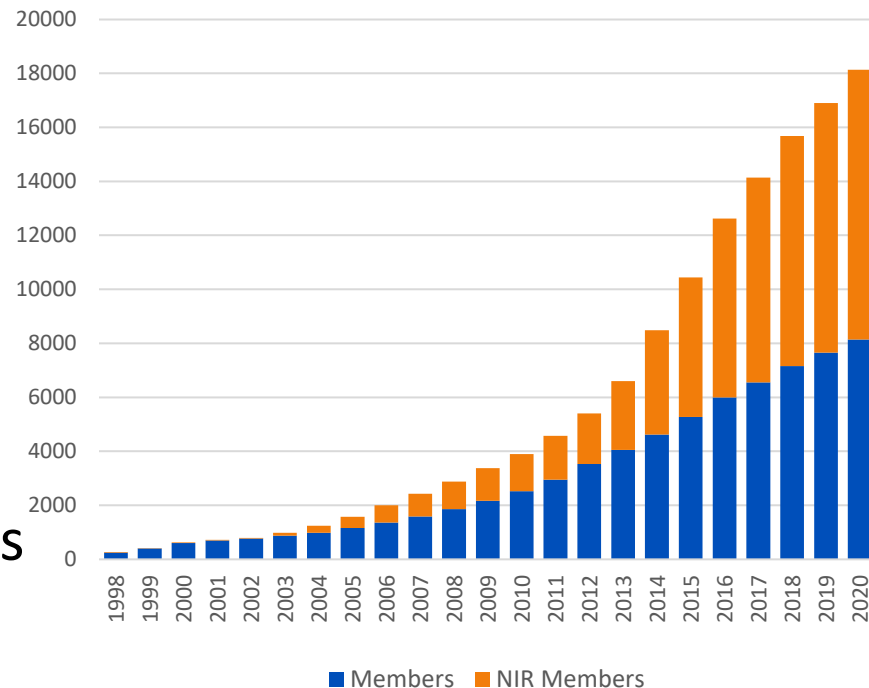




Member Services



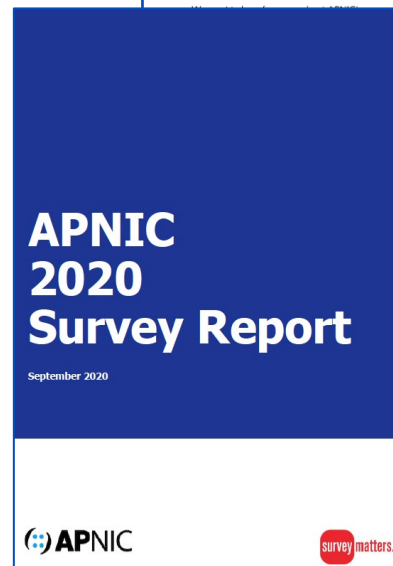
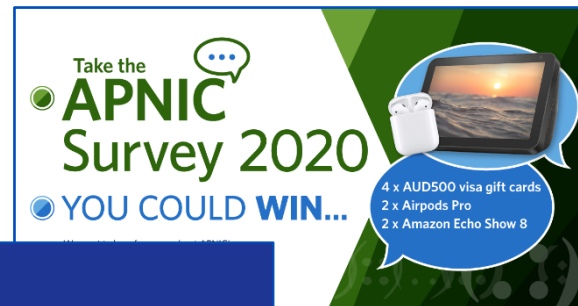
- Total APNIC members 8,136
– plus 10,002 NIR members = 18,138
- Service satisfaction 92.5%
‘excellent’ and ‘above average’
- Above 99% SLA response time on Helpdesk queries
- Fraud cases returned to low levels during May-July



APNIC Survey



- April: 41 remote interviews with APNIC Members and stakeholders across 26 economies
- July: Survey conducted in 16 languages
 - 1,624 valid responses (↑ 31% on 2018)
 - 35% completed survey in language other than English
- Full report: apnic.net/survey



Membership Products



MyAPNIC



Dashboard

Hi Bhadrka

Personal Settings
Log Out

MEMBERSHIP

Link Existing Membership

OTHER SERVICES

Academy
Training
Blog
Internet Directory
Policy Development
Fellowship

Welcome to your dashboard, Bhadrka

What's New

2020 APRICOT APNIC 49

Register now APRICOT 2020

Join network engineers, technical experts, and Internet business leaders from around the world at APRICOT 2020 in Melbourne — Register Now!

[Register now APRICOT 2020](#)

Service Announcements [View all](#)

Service announcement: 30 January 2020

Service announcement: 29 January 2020

Service announcement: 21 January 2020

Service announcement: 22 January 2020

Service announcement: MyAPNIC Updates

MyAPNIC has changed.

Welcome to the new look MyAPNIC, we have been working hard in the background to setup our systems and infrastructure so that we can get ready for the decade ahead.

[Read more](#)

- New MyAPNIC front end
- MyAPNIC access via 'APNIC Login' SSO
- 'abuse-c' and 'Role' updates for IRT objects (prop-125)
- New API to share Member data between internal applications
- Improved new membership form (70% decrease in fake applications)
- Transfer invoicing now fully automated

Investments



Online community platform

- Platform for improved online participation
- Target communities being identified
- Validation of requirements
- Help centre being developed

Election system

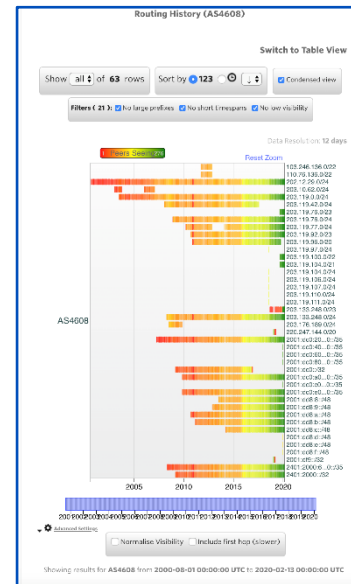
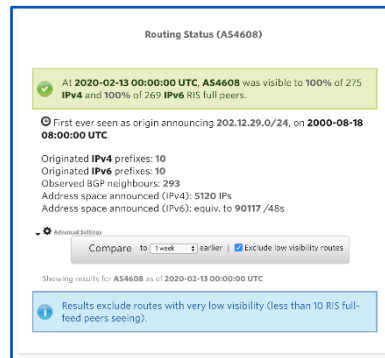
- BigPulse implemented
- APNIC 49: 13,063 total votes received (highest on record)
- Voting, proxy appointment successfully completed online by 913 members
- Will be used for NRO NC elections at APNIC 50



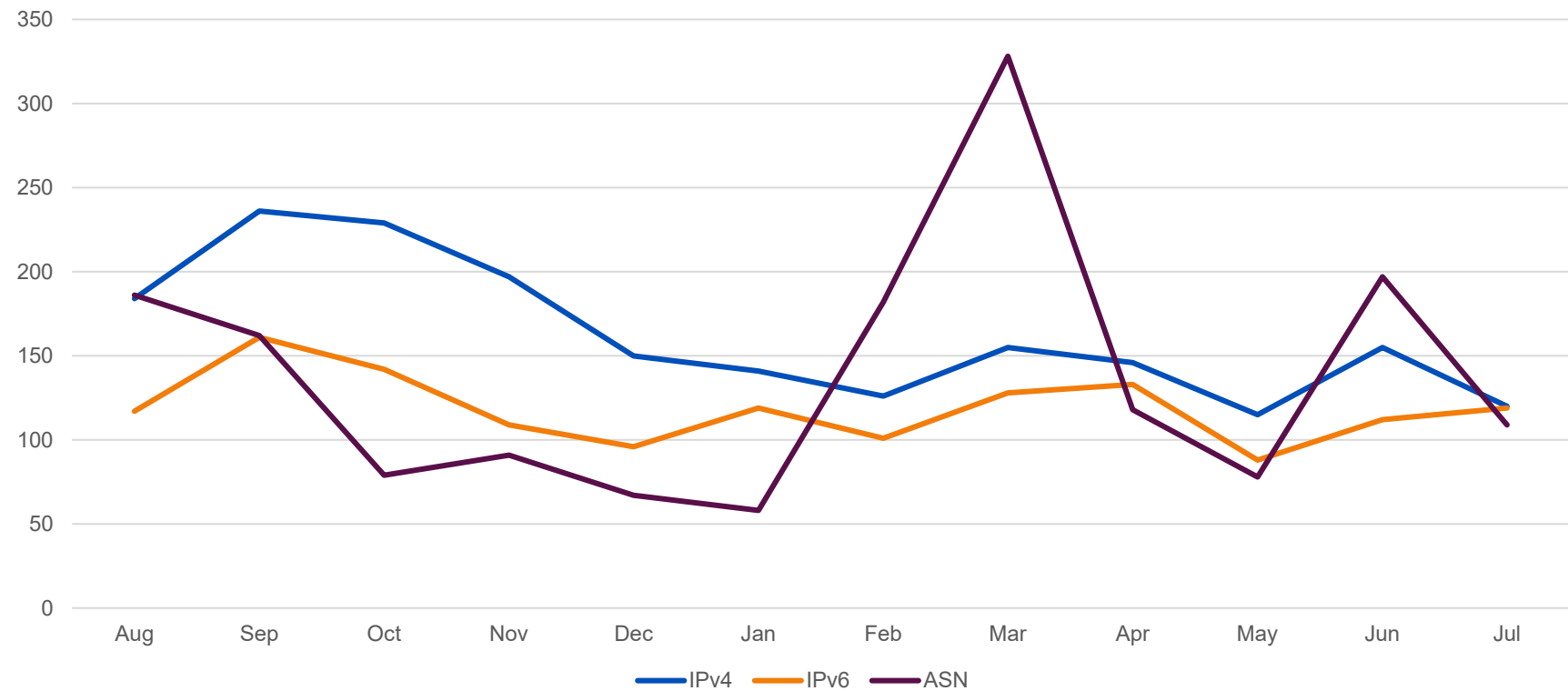
Registration Services



- Resource Quality Check
 - New functionality in NetOX
- Registry accuracy
 - Org object creation (500 Members)
 - Correction of NIR transfer records
 - Validation of IRT email every six months (prop-125)
- Reclaiming unused IPv4 addresses
 - New listing service for Members deployed in July

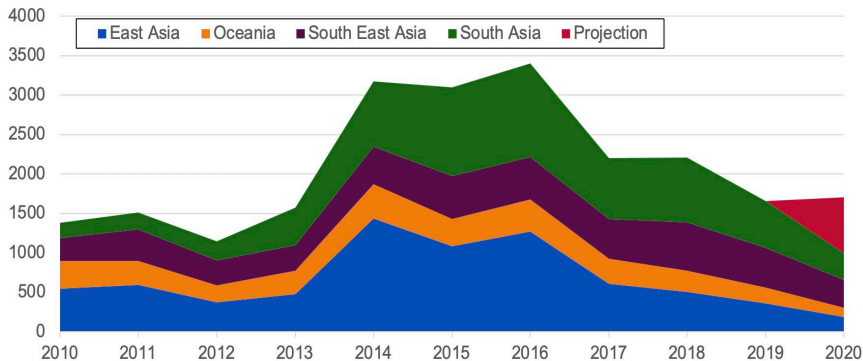


Resource Delegations

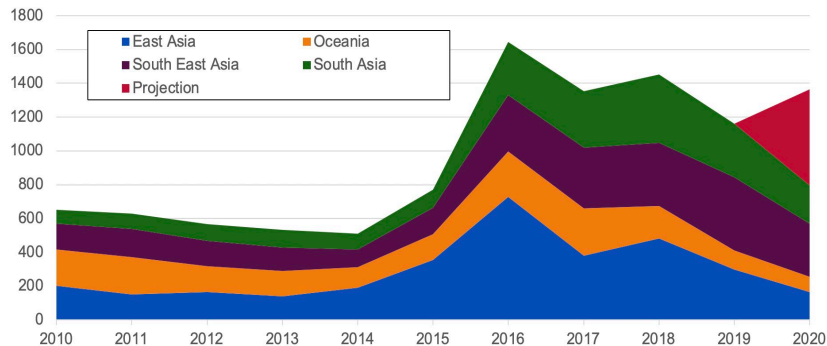


To 31 Jul 2020

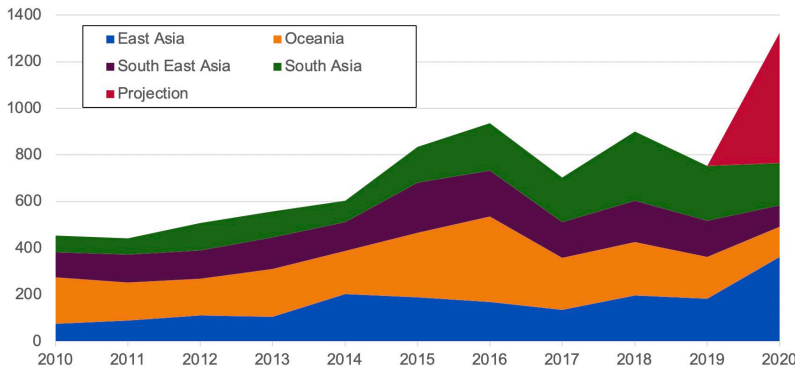
Resource Delegations



IPv4



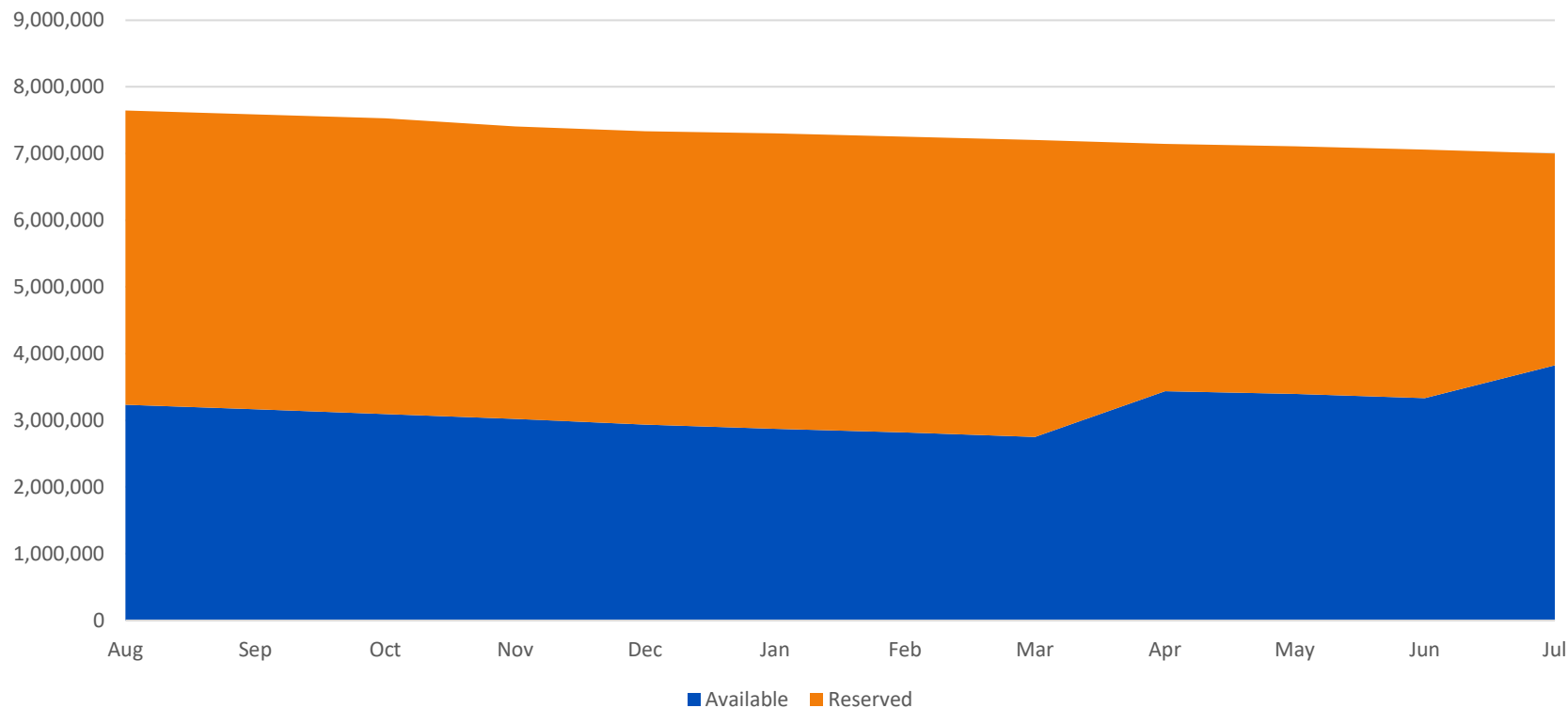
IPv6



ASNs

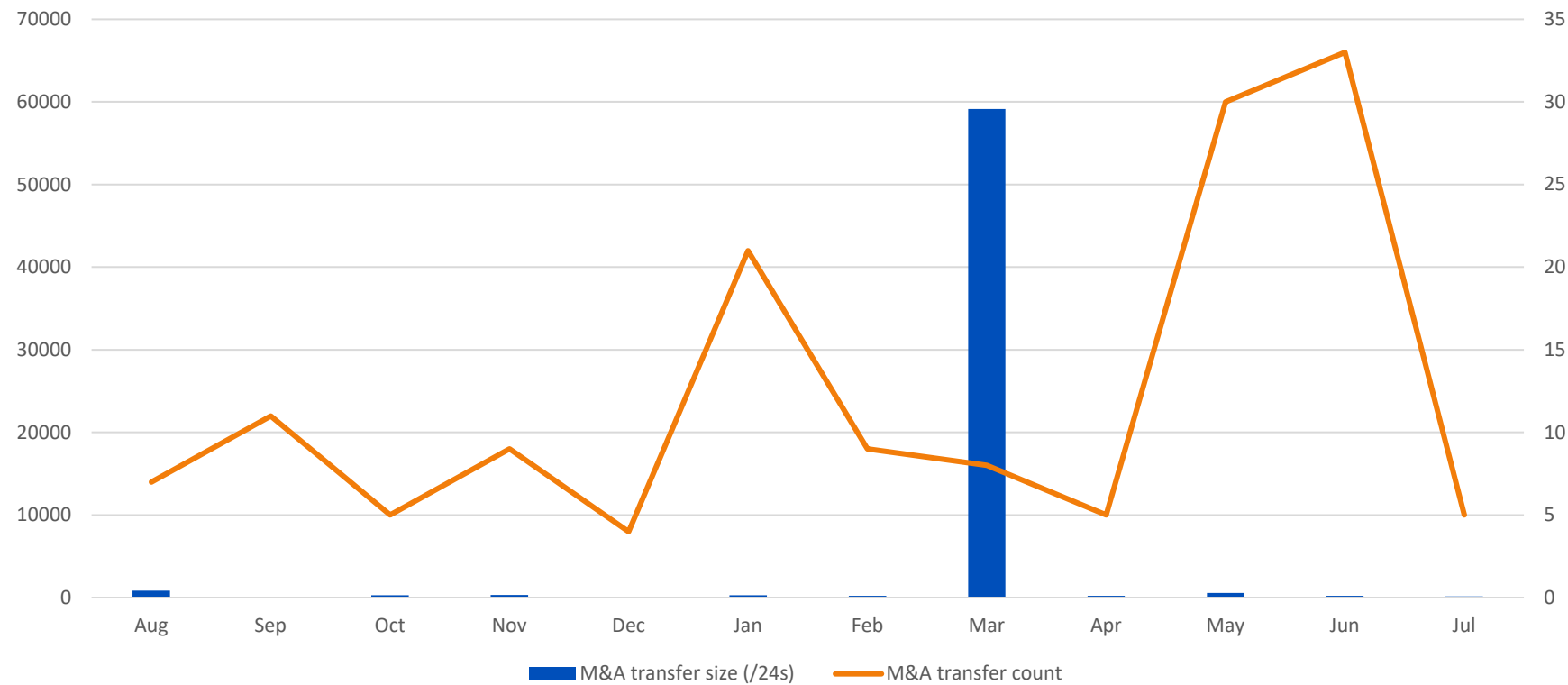
To 31 July 2020

IPv4 Pool Status



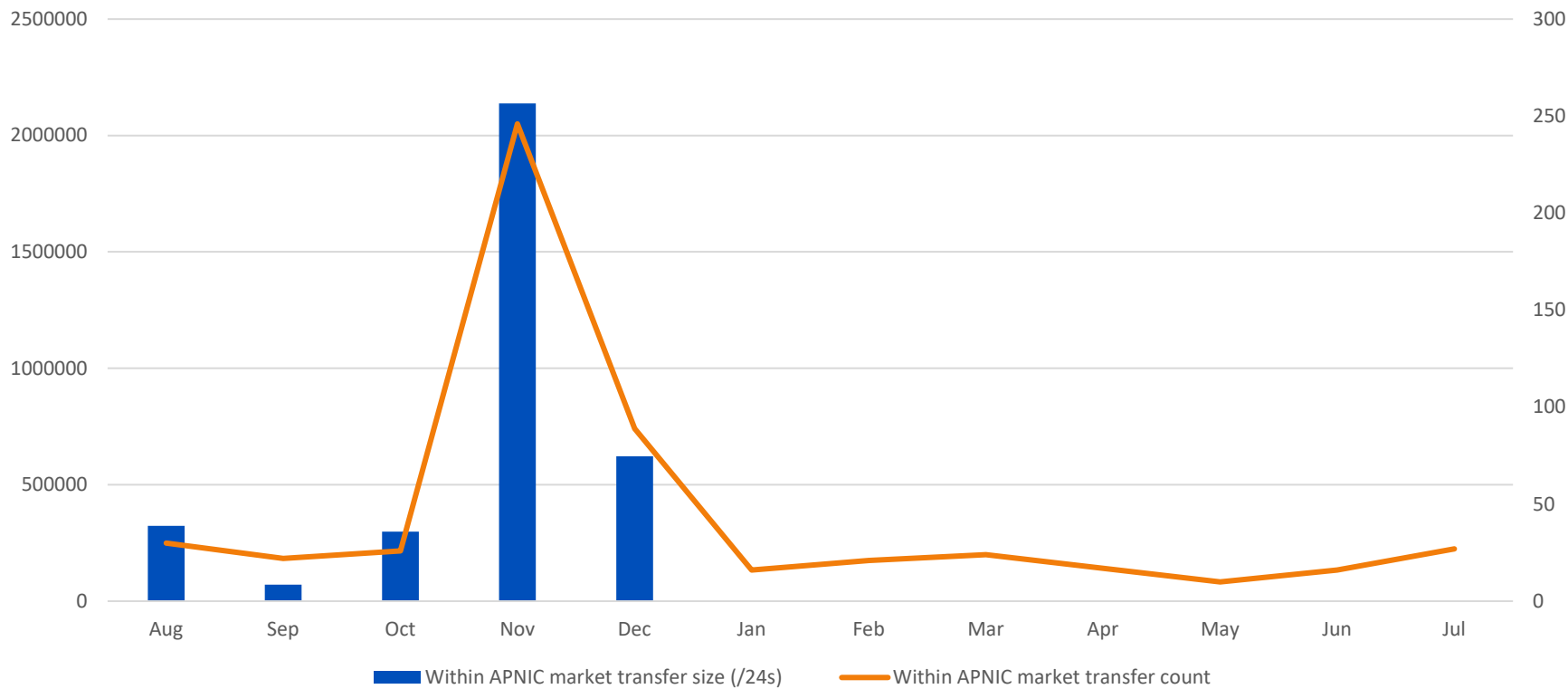
To 31 Jul 2020

M&A and Historical Transfers



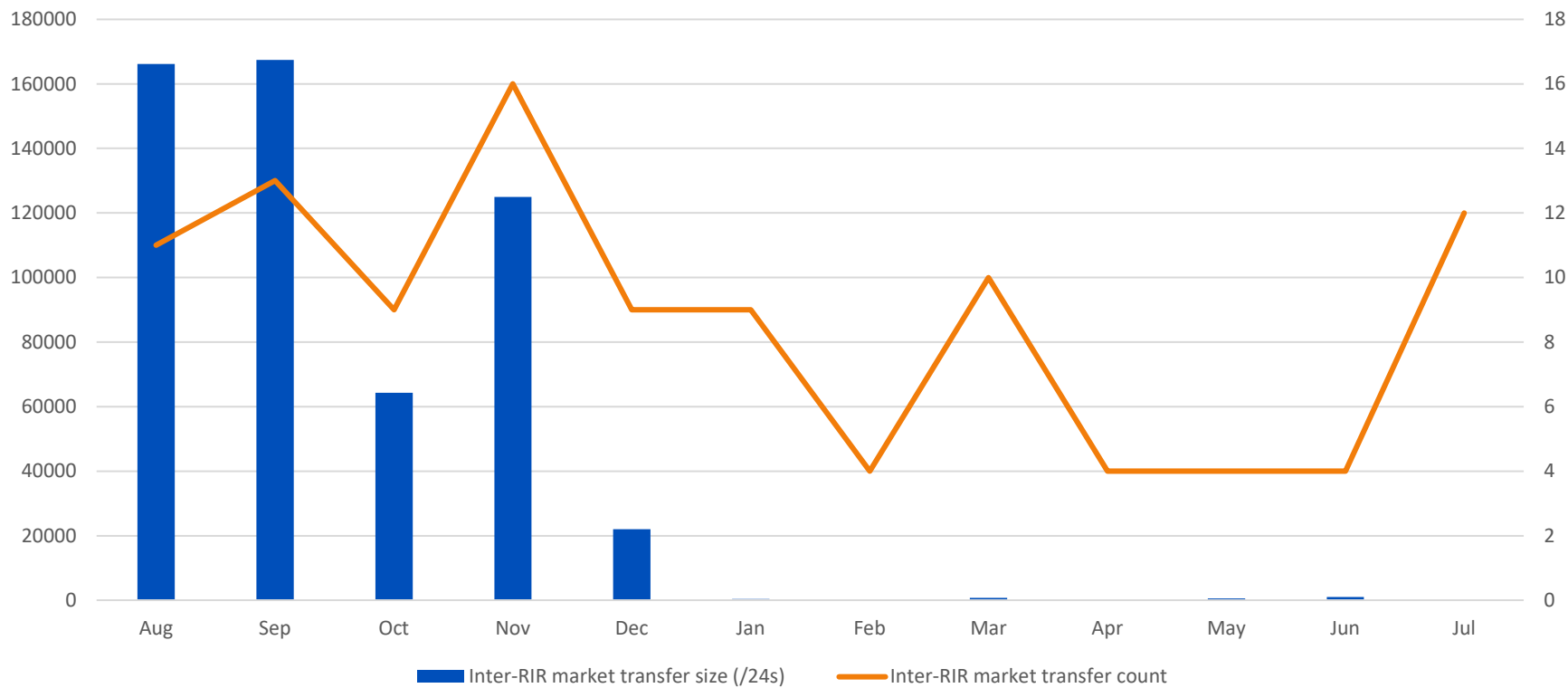
To 31 Jul 2020

IPv4 Market Transfers (within region)



To 31 Jul 2020

IPv4 Transfers (inter-regional)



To 31 Jul 2020

Registry Products



- Automating return of terminated addresses to free pool
- Pool service software changes for historical record amendments
- New VNNIC registry system assistance to align better with APNIC data
- First Google cloud-based APNIC RDAP service deployed
- Five product development meetings with NIRs and 13 UX user interviews held at APRICOT 2020
- RPKI CPS (Certification Practice Statement) review with RIPE NCC

Investments



RPKI ASO ROA

- Public testbed deployed for APNIC 49
- Coding work continues; update at APNIC 50
- Liaison among RIRs on ASO ROA proposals

Additional Investments

- Funding for OpenBSD to implement RDAP
- Support for 'Krill' and 'Routinator' development
- Support for NLNET to implement RTA

Policy Development



Discussed at APNIC 49	Status
prop-130: Modification of transfer policies	Did not reach consensus and sent back to mailing list
prop-133: Clarification on sub-assignments	Did not reach consensus and sent back to mailing list
prop-134: PDP update	Did not reach consensus and withdrawn

- Implementation continues on prop-132: RPKI ROAs for unallocated and unassigned address space
- No new policy proposals at APNIC 50 – proposals under discussion deferred to APNIC 51



APNIC 49 Policy SIG

Investments



Policy documentation review

- Consultant appointed and draft review reports received
- Initial findings presented at APNIC 50 OPM



APNIC Conferences



On-site delegates	563
Economies	60
APNIC Members	142
Remote participants – Zoom	185
Remote participants – YouTube	2,313 views; 29,190 minutes
#apricot2020 tweets	827 from 277 users

- Third Hackathon held with 13 participants
- RPKI Deployathon (with JPNIC) for 40 participants
- First Routing SIG meeting
- Internet community events: FIRST TC, DotAsia AGM, APIX, AP* Retreat, MANRS meeting and ISOC Social
- Conference participant satisfaction 96.6%

APNIC Conferences



- First online APNIC conference
 - Condensed program
 - Call for Papers opened 12 May
- New program structure and simpler conference registration form
 - 486 registrations at end of July (expected to more than double by Sept)
- Web development and system integration to support 100% online conference
- Preparations
 - NFH as 'rehearsal'
 - Meetings with ICANN and RIPE NCC to review experience



Investments



Fellowships

- No travel fellowships for APNIC 50. Fellowships will resume in 2021

Foundation Support - Investments



Foundation support

- Project budget supported additional administrative positions
- APNIC staff support for finance, HR and communications
- Independent financial audit
- Support for APIDT creation

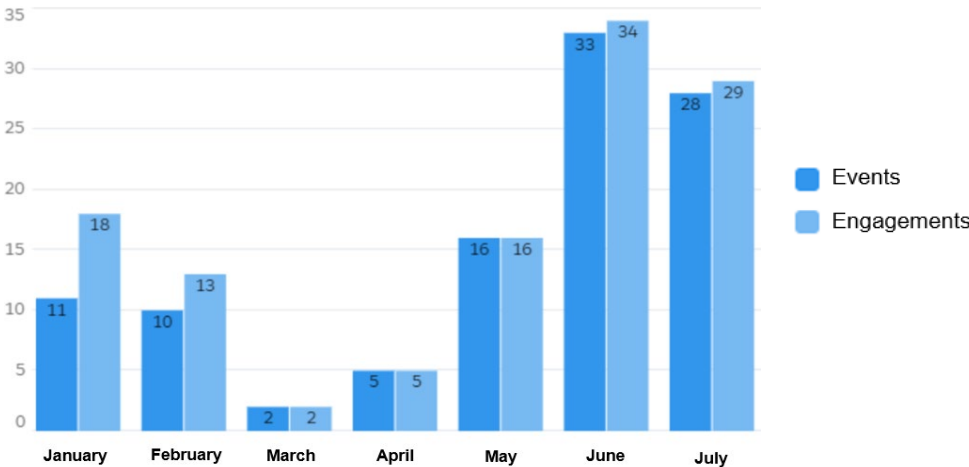
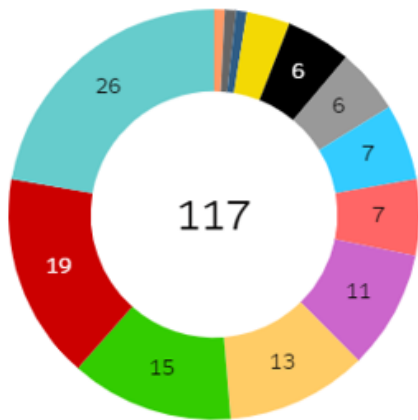
ISIF Asia

- 2020 Network Operations Research Grants opened 2 April
- Expanded funding to USD 120K for four selected grants

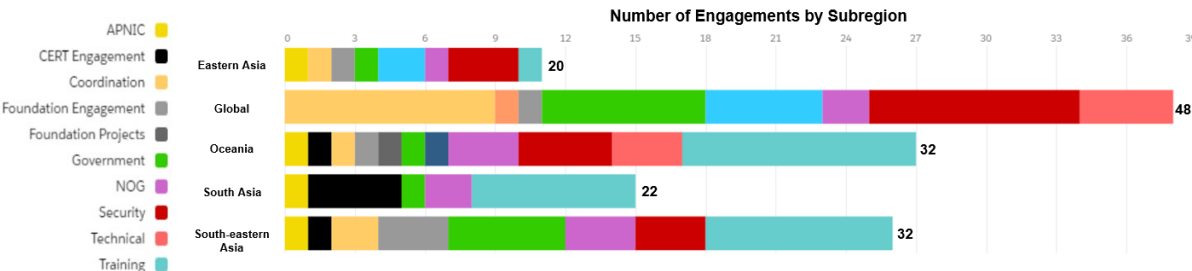
Community Engagement



Total Engagements by Outreach Type



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



Participation online from March 2020

Technical Community Support



- APNIC supported formation of PNGNOG
 - PNGNOG v0.1 held 17 June
- Sponsorship of PeeringDB and IXP Manager
- Working with community to establish IXP in Maldives and reestablish IXP in Samoa
- Member of APAN 50 Technical Committee, supporting APAN's Security Working Group

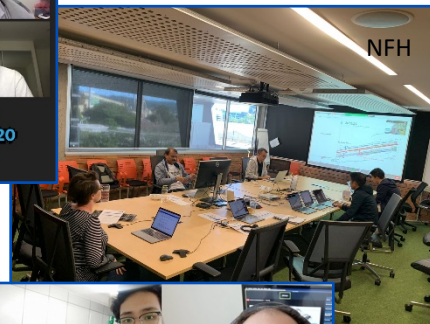
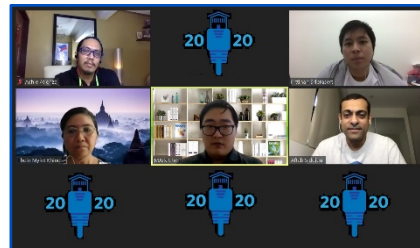
Technical Community Support

- APNIC supported the following NOGs with sponsorship (s), presentations (p), technical support (t) and program committee (c) contributions in 2020 to date

	South Asia	South East Asia	East Asia	Oceania
Jan	bdNOG (s) (p) (c), SANOG 35 (s) (p) (c)	MMIX/MMNOG (s)	JANOG 45 (s) (p)	NZNOG (p)
Feb		PhNOG (s) (p) (c)		
Mar				
Apr				
May				
June				
July		PhNOG Virtual 2020 (p) (c) (t)		PNGNOG v1.0(s) (p) (c) (t) PacNOG (p) (c)

Networking From Home

- Online events due to COVID-19 event cancellations
- 21 NOGs pledged support
- Sub-regional time zone alignment
 - South East Asia 2 Jun; South Asia 17 Jun; East Asia 15 Jul; Oceania 4 Aug
- Four NFH program committees with NOG representatives
- 993 participants from 39 economies attended first 3 events:
 - Watched avg 1 hour 40 mins (67% of each 2.5-hour event)
 - 91% participants from Asia Pacific



Security Community Support



Jan	Feb	April	May	June	July
LEARN (Sri Lanka) (p)	FIRST TC at APRICOT 2020 (Australia) (m)	Physical Information Security Seminar (Academy) (web)	Cyber Threat Intelligence Summit (m)	PacSON Introduction to Suricata (t)	PacSON Suricata signature writing (t)
Pakistan Telecom Authority (Pakistan) (w)	GFCE Pacific Regional Meeting (Australia) (p)	Webinar Cambodia Cyber Security Community (Secudemy) (web)	EU ATT&CK Workshop (p)	FIRST.org SIG (m)	UCENET and Interpol (p)
	Samoa IT Association (Samoa) (w), (p)		MYREN (Malaysia) (t)	IX2020 Internet Security and Mitigation or Risk (p)	Incidence Response and Digital Forensics (w)
	Hong Kong Police Force (Hong Kong) (p)		CERTs/CSIRTs (Indonesia) (p)	PITA Technical and Business Forum (p)	Security monitoring and Elastic Stack (w)
	Cyber Pasifika program with AFP (Australia) (m)		Elastic Stack (Solomon Islands) (t)		

(p): presentation; (w) workshop; (m) meeting; (t) tutorial; (web) webinar

Internet Organization Cooperation



- Seven NRO EC teleconferences and eight ITCG calls
 - Hosted AFRINIC CEO Eddy Kayihura in Brisbane
 - Virtual three-day NRO EC retreat to discuss ASO Review, NRO-ICANN relationship and strengthening RIR collaboration
- ICANN 67, 68; IETF 107 (SIDROPS, REGEXT, DNSOP)
- NRO ECG, RSCG and PACG participation
 - PACG monitoring ITU WTSA
- LACNIC 33, RIPE 80, ARIN 45 participation
- Virtual meeting with I* organizations

Internet Governance and Govt Engagement

- Authored chapter “Putting the technical back into cyber (policy)” in Routledge Handbook of International Cybersecurity
- Pablo Hinojosa appointed member of ITCG committee to recommend representatives for IGF MAG
- Joyce Chen joined APNIC as Senior Advisor – Strategic Engagement
- Participation in IGF MAG, UN Roadmap for Digital Cooperation, HK IGF 2020, WSIS Forum 2020 (ongoing), Broadband India Forum, RightsCon Online 2020, EU Cyber Direct’s Closing the Gap, Fair Tech Forum
- Submitted proposal to IGF 2020 and three workshop proposals to APriGF
 - Participation in APriGF, NetThing, TWIGF preparations
- Public consultation with Australian government on responsible state behavior in cyberspace
- AFP collaboration on LEA training for Cyber Safety Pasifika program
- Submitted sector membership application to ITU-T (subject to fee exemption)
- Spoke at Australian government webinar on ITU OEWG and GGE processes
- Participated in 2020 Global Cybersecurity Capacity Building Conference, GFCE Pacific Regional Meeting, 2nd APT Regional prep meeting for WTSA 2020, GFCE 5th anniversary series of virtual meetings, ITU TDAG, ITU APT WTSA 20, UNIDIR, INCB (APNIC represented PSCG here), ITU WTDC 21-1, ITU Global Symposium for Regulators 2020, WSIS Forum 2020 (ongoing)



Community Participation

- 242 attendees and 391 remote participants in APNIC 49 SIG meetings
- 3 APNIC Academy Socials on Facebook with 22,952 minutes viewed and 1,614 post engagements
- Encouraging newcomers
 - 60% of APRICOT attendees were newcomers (336)
 - 156 new Blog subscribers
 - 856 new Twitter followers
 - 644 new LinkedIn followers
 - 789 new people liked APNIC's Facebook

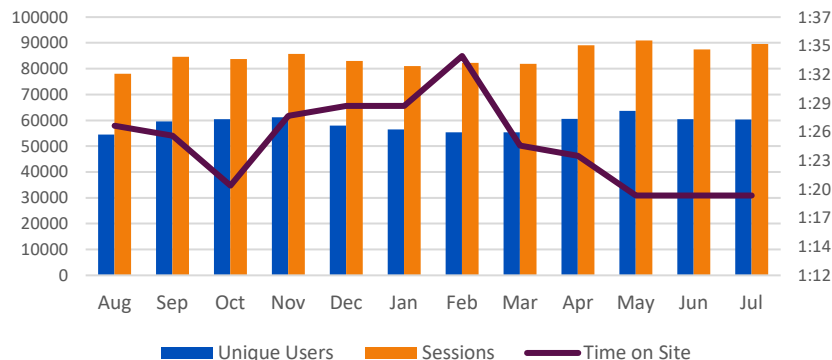


Online Participation - Social Media



		2019 monthly average	Jan	Feb	Mar	Apr	May	June	July	Total
Facebook	Reach	189,613	78,781	61,064	97,002	729,780	349,168	445,218	208,839	1,969,852
	Likes	N/A	29,307	29,487	29,583	29,686	29,861	30,022	30,030	30,030
Twitter	Followers	N/A	10,975	11,128	11,205	11,332	11,488	11,648	11,738	11,738
	Engagement	3,891	4,165	6,770	3,824	5,897	6,364	7,424	5,212	39,656
YouTube	Views	3,296	2,430	7,433	3,561	3,508	3,077	3,779	2,612	26,400
	Hours	375.21	256.68	1,037.04	354.79	308.71	311.12	387.1	241.8	2,897.6
Slideshare	Views	12,975	12,633	14,710	13,429	13,479	12,539	12,119	11,610	90,519
LinkedIn	Reach	4,131	7,734	11,488	15,803	7,997	6,552	8,403	18,039	77,670
	Followers	N/A	4,354	4,454	4,545	4,632	4,730	4,825	4,930	4,930

Online Participation – apnic.net



	Total sessions	Unique users	Pages per session	Time on site
January	81,052	56,436	1.78	1:29
February	82,294	55,357	1.76	1:34
March	81,861	55,306	1.72	1:25
April	89,096	60,609	1.70	1:24
May	90,925	63,678	1.69	1:20
June	87,433	60,465	1.71	1:20
July	89,502	60,351	1.73	1:20
Total	602,163	412,202	1.73	1:24

	Total sessions	Unique users
United States	70,966	55,736
India	70,172	46,224
China	52,141	36,850
Japan	38,828	28,199
Australia	26,202	15,158
Bangladesh	36,583	17,320
Indonesia	20,570	11,806
Hong Kong	36,078	10,497
Philippines	17,093	10,128
Brazil	10,923	10,350

Top 10 economies - apnic.net website visits

- 25% of visitors used a mobile device to access apnic.net

Investments



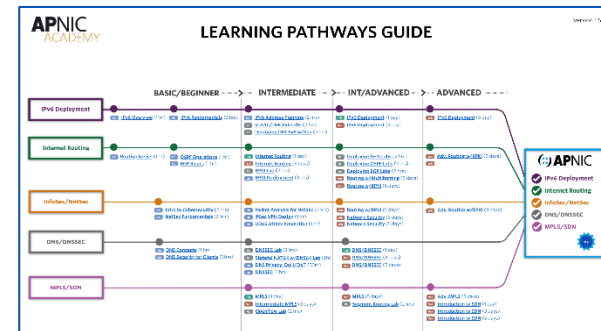
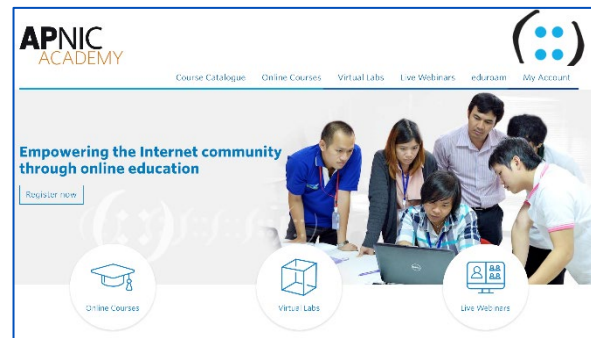
Community diversity

- Single dataset produced for ongoing reporting
- New demographic questions included in 2020 APNIC Survey

APNIC Academy

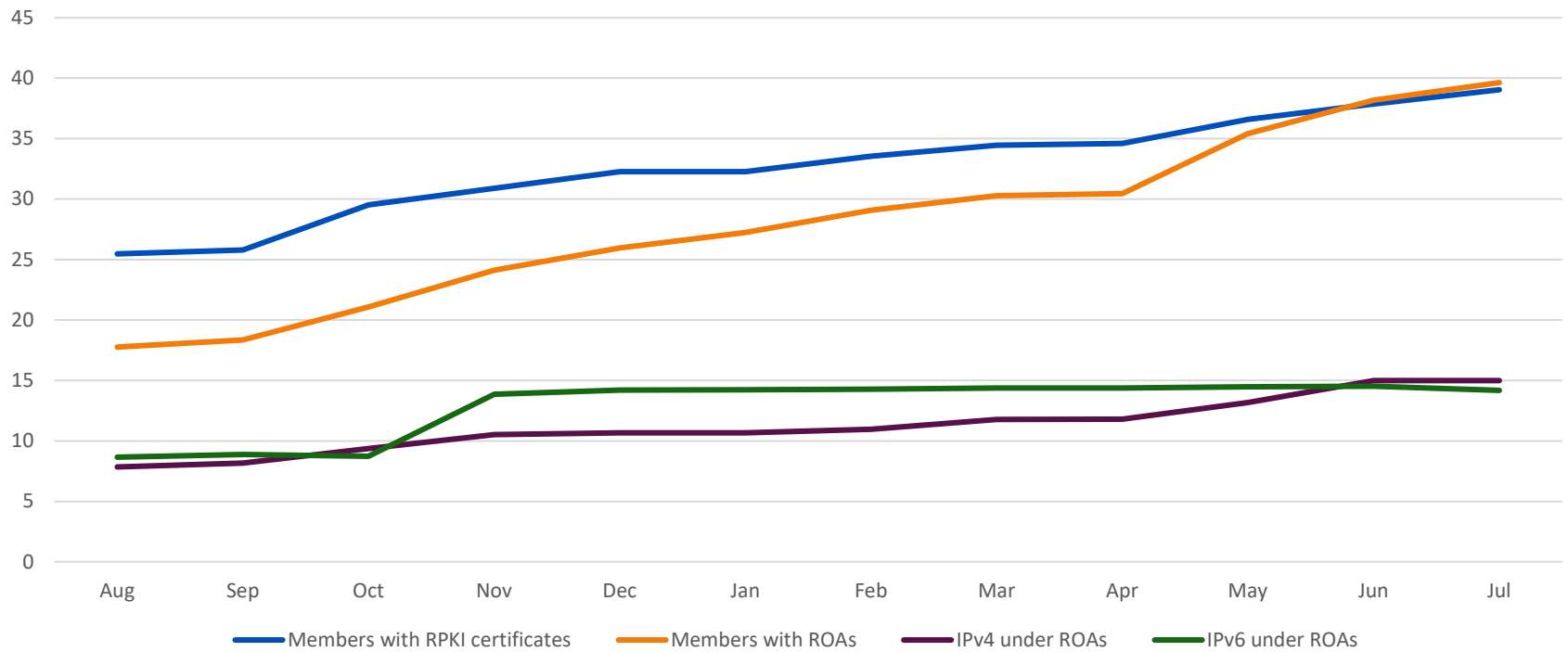


- New online Training Program under COVID-19 travel restrictions
- 18 Community Trainer contracts renewed
 - Four CTs delivered training at bdNOG 11, MMNOG and SANOG 35
- New Network Management and Monitoring course
- Six new virtual labs and two courses converted to video-based format
- New course catalogue and learning pathways guide
- TA: IXP support to Fiji IX, VNIX, Maldives IX, HKIX, MyIX (upgrades, route server filtering policy, designs)
 - Academy platform TA feature in development





	Face-to-Face	Live Online Training	APNIC Academy
Courses	10 courses/workshops	16 courses	7 courses/1,702 certs /1,931 hours
Virtual Labs			2,982 labs launched 2,619 hours
Training days	25	15.25	
Webinars			11 webinars/1,806 attendees
Student days/hours	658 student days	613 student days	
Students	244	1,190	5,654 active users from 9,101 users
Locations	7 cities/6 economies		37 economies
YouTube Training Channel			15,215 views/284 new subscribers

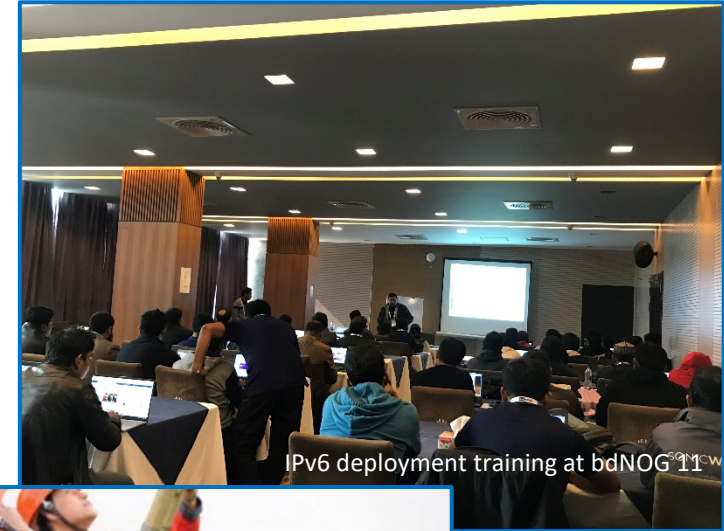


To 31 Jul 2020

IPv6



- Three training sessions at bdNOG 11, SANOG 35, PhNOG 2020 (Feb event)
- 33 IPv6 tagged posts published on APNIC Blog
- New IPv6 deployment success stories published, bringing total to 38



3BB Broadband (Thailand)

IPv6 capability in Thailand has increased from around 2% to 30% with the help of 3BB.

 3BB helps grow IPv6 capability in Thailand

Investments



APNIC Academy development

- Academy product team established
- Course catalogue added to enhance Member training experience
- Migrating training.apnic.net content to Academy
- Adding Bengali to Academy website

Internet Infrastructure Deployment



IXPs

- Donated used switches to Fiji IXP (upgrade), Lahore IX (for setup), BKNIX
- High-level operating principles document and IXP design shared with Maldives IXP
- Helped VNIX with route server filtering policy template
- Helped MyIX and HKIX with technical validation of ROV deployment

Honeynet

- Backend systems serving project upgraded and enhanced
- Three new partners from Hong Kong, Bangladesh, and Japan

Investments



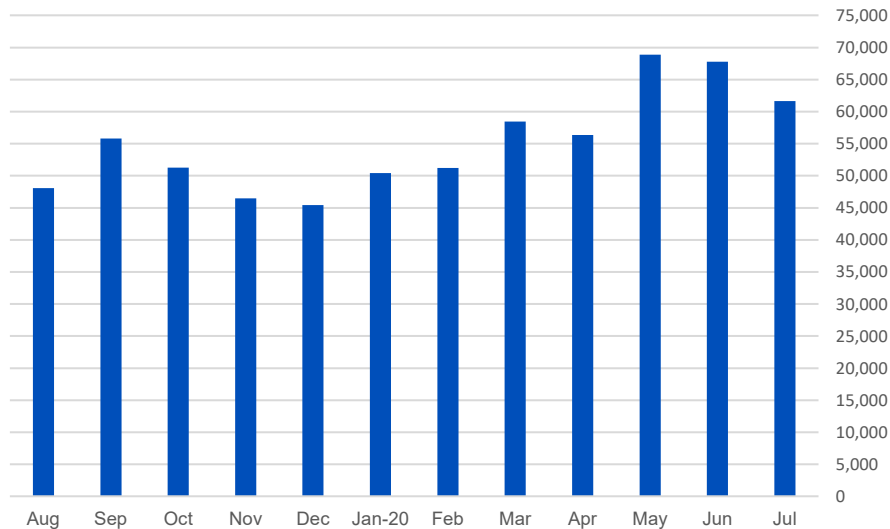
M-root anycast instance deployment

- MoU with WIDE Project and JPRS signed
- Preparing for first deployments in Brisbane and Viet Nam

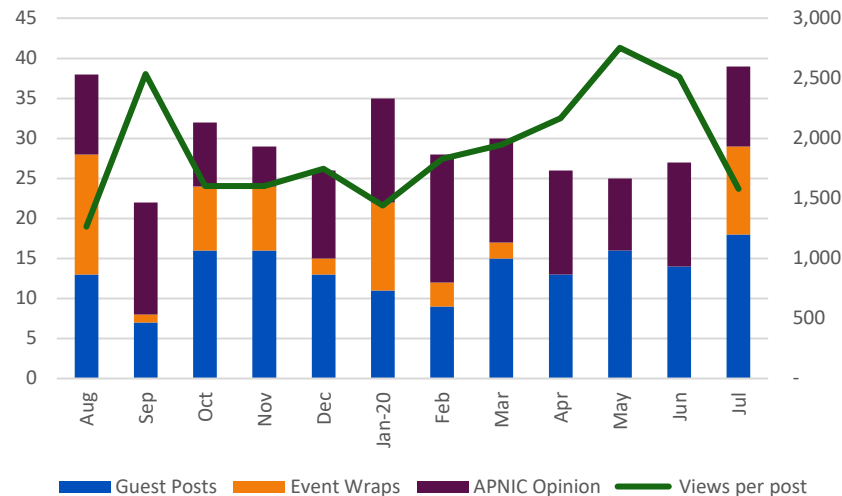
Security threat sharing platform

- Developing plans, identifying potential partners, tools and current state of sharing in community





Monthly Unique Views



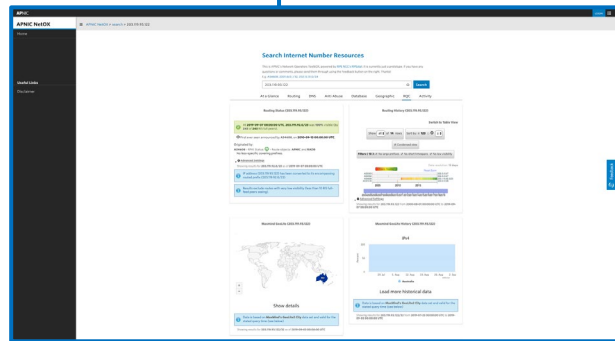
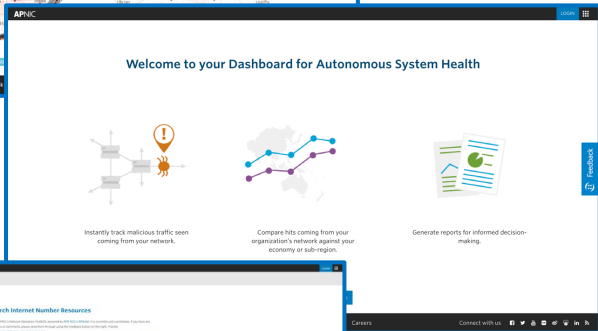
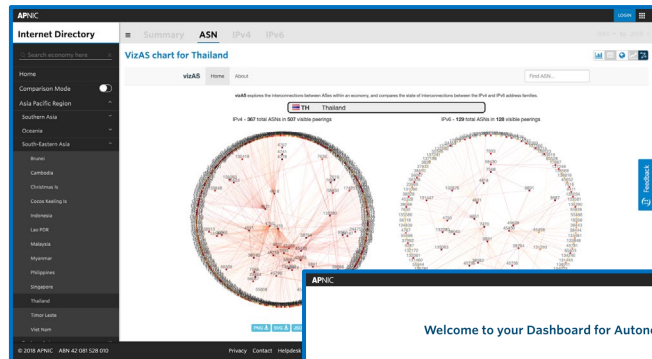
Monthly Blog Posts

- 59,249 views/month (↑ 23% on 2019)
- 52% Guest Post ratio

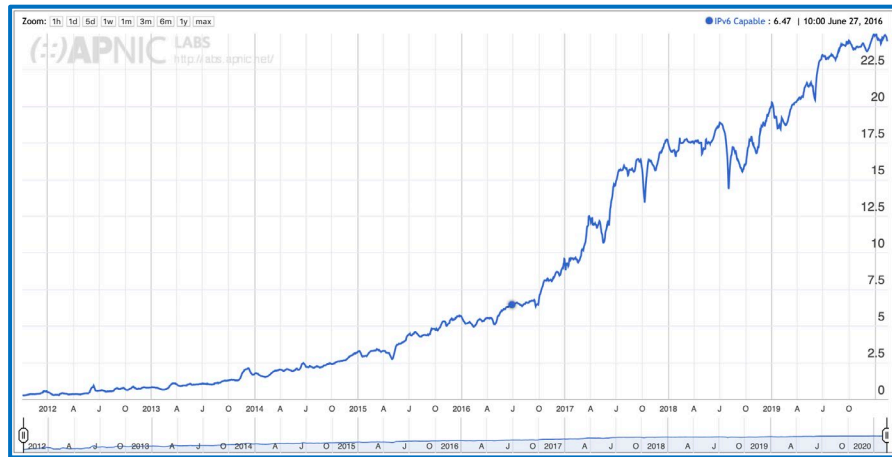
Information Products



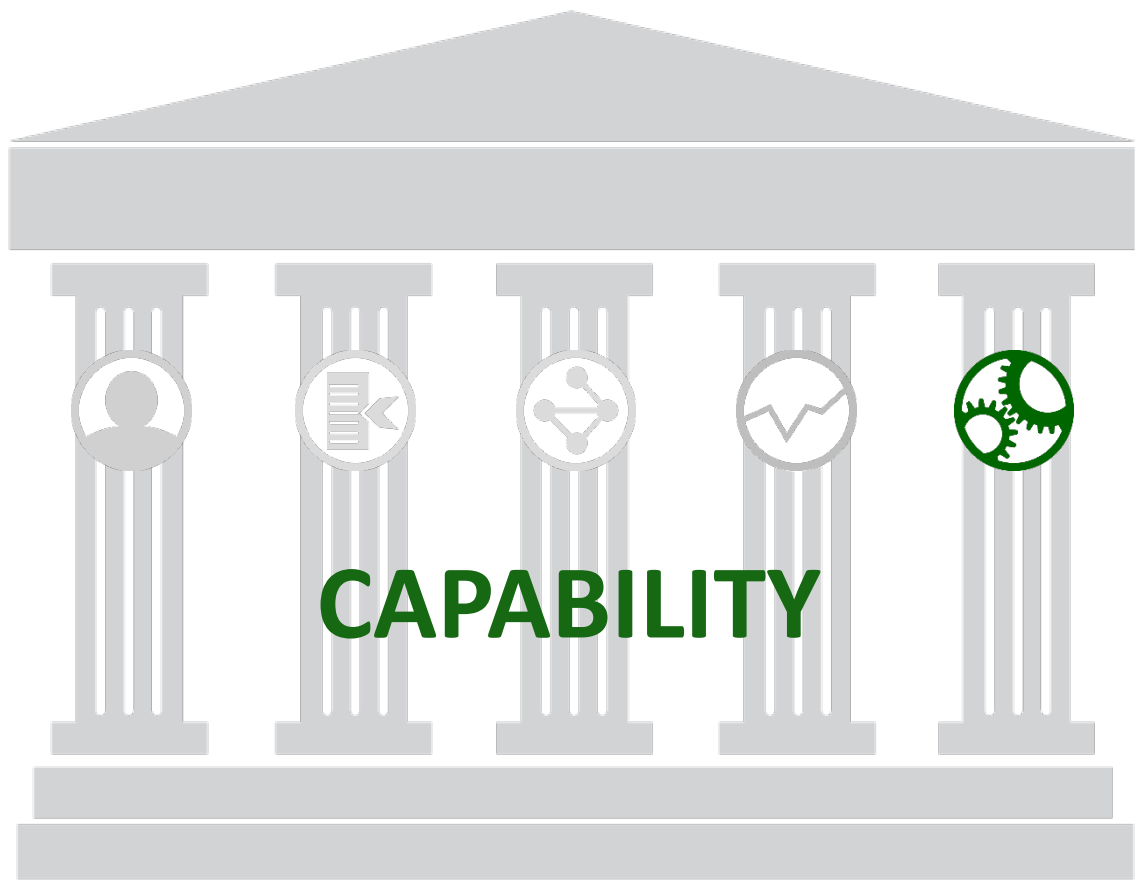
- Internet Directory
 - New information architecture in development
 - New 'economy' widget in development
 - Interface improvements
 - Usability score 4.7 (Target 4.5)
- DASH
 - Finalizing DASH v1.0 for UAT
 - Usability score 5 (Target 4.5)
- NetOX
 - Welcome page being implemented
 - Localization pilot: Chinese
 - Usability score 4.8 (Target 4.5)



Research and Analysis



- 19 presentations (F2F and online) at RIRs, NOGs, IETF
- 19 research blog posts in 2020 to date
- Research projects
 - IPv6 capability
 - Advertised, unadvertised and reserved pools analysis
 - BGP growth and anomaly detection
 - RPKI ROV monitor in development
 - DNS research — DOH usage, large responses
- Cooperative research
 - Routing data for MANRS
 - ITHI measurement framework
 - Measurement on DNS and DNSSEC with ICANN



Internal Technical Infrastructure



Information architecture and management	<ul style="list-style-type: none">• Dependency management framework complete• Six new APIs specified to improve internal system integration
Network and infrastructure operations	<ul style="list-style-type: none">• Transit and peering connectivity reviewed• New gigabyte IX peering established with EdgeIX from NextDC B1• MANRS compliant after ISOC evaluation• Wi-Fi upgraded to support Wi-Fi 6 standard
System and platform operations	<ul style="list-style-type: none">• RDAP deployed to Google Cloud GKE cluster• Cloudflare configured to load balance production traffic to the GKE cluster supporting RDAP• TLSv1.0 and TLSv1.1 deprecation across all APNIC 'browser-based services• HSM configured to create a separate key for RPKI ASO ROA• Work in progress to consolidate and upgrade MySQL• Cloudflare reconfigured to use heavy caching to improve response and availability
CSIRT operations	<ul style="list-style-type: none">• AUP and BYOD policy updated as part of ISO 27001 ISMS• Vulnerability Reporting Program published and new GPG key for CSIRT email (csirt@apnic.net)• External penetration testing completed with no high severity vulnerabilities• Security awareness training for staff during COVID-19 WFH period• Audit of administrator accounts and review of current technical controls conducted
Enterprise application management	<ul style="list-style-type: none">• Litmos implemented for staff compliance with internal policies• All staff and Community Trainers migrated to OKTA for web application access• S/MIME Digital Signing and email encryption being implemented• Legacy Application Roadmap to move internal apps to Open ID Connect standards
Service availability	<ul style="list-style-type: none">• 99.97% Critical services; 99.99% Non-critical services

Investments



Network presence at Asia Pacific
Internet hubs

- Remote connection to Equinix IX established with significant reduction in latency
- Reachability being measured using RIPE Atlas anchors from several locations to provide baseline data for comparison

Finance and Business Services



- Audit of APNIC's financial accounts completed by Deloitte
- New PBCS financial reporting tool implemented
- ISO9001:2016 QMS internal audit in progress ahead of external audit in August
- COVID-19 response
 - Dedicated BCP team established, meeting weekly
 - WFH planned and implemented from March
 - Office access and facilities/hygiene management

Investments



Business intelligence

- Data warehousing system developed for production in August
- BEAM methodology applied to business process to define 'data mart' system



Employee Experience

- Training underway to increase 'agile' adoption
- Nine roles successfully filled
 - Staff turnover rate at 2.4% (benchmark between 5 and 15%)
- All ELT, management and specialists participating in leadership development program
- Whistle-blower and Gifts and Benefits policies in development
- Building surveillance system upgrade

Investments



Product management

- Product teams for Academy and Enterprise systems established
- Product management training completed with ongoing coaching provided



- EC support
 - Sumon Ahmed Sabir and Achie Atienza elected to EC for the first time, Kam Sze Yeung re-elected for a third term
 - EC meeting held in Melbourne in February, teleconferences in March, May and June
- Corporate governance and legal
 - Revised Strategic Risk Register under Strategic Plan 2020-2023
 - Updated Privacy Statements published for APNIC and APNIC Foundation
 - Crisis management and communication training provided to Leadership Team in March

THANKS!



APNIC 50 (UTC+8) – AMM – Agenda – Draft v4

AMM 1

Time	Topic	Speaker	Zoom Appearance
13:30	EC Chair welcome and opening remarks	Gaurab Raj Upadhaya	Gallery view. All EC to have video on.
13:35	APNIC Secretariat Report	Paul Wilson	Presenter view. Video off if not presenting.
13:55	APNIC EC Treasurer report	Kenny Huang	Presenter view. Video off if not presenting.
14:05	APNIC EC Report	Gaurab Raj Upadhaya	Presenter view. Video off if not presenting.
14:15	Open Mic		Gallery view. All EC to have video on.
14:25	NRO NC Election Results	Munir Hasan	Presenter view. Video off if not presenting.
14:30	Afternoon Tea Break		

AMM 2

Time	Topic	Speaker	Zoom Appearance
14:45	APIDT Update	Craig Ng	Presenter view. Video off if not presenting.
14:55	NIR SIG Report	Billy Cheon	Presenter view. Video off if not presenting.
15:00	Policy SIG Report	Bertrand Cherrier	Presenter view. Video off if not presenting.
15:05	APNIC Survey 2020	Brenda Mainland	Presenter view. Video off if not presenting.
15:20	Open Mic		Gallery view. All EC to have video on.
15:30	Routing Security SIG Report	Aftab Siddiqui	Presenter view. Video off if not presenting.
15:35	Cooperation SIG Report	Joy Chan	Presenter view. Video off if not presenting.
15:40	Vote of Thanks	Paul Wilson	Presenter view. Video off if not presenting.
15:45	EC final Remarks and Close	Gaurab Raj Upadhaya	Gallery view. All EC to have video on.

Agenda Item 13

APNIC Foundation update

Foundation Update

EC meeting (On-line)

4 September 2020

Duncan Macintosh

Foundation CEO

Agenda



Overview



Board



Projects update



Funding

Report Overview

- 1) Candidate proposed for 7th and final Board position
- 2) New project funding confirmed
- 3) ISIF grantees announced
- 4) Proposal development with APIDT has begun

Funding overview

Total funds raised since launch as of September 2020: USD 2,224,295

15 % overhead approx. = USD 333,644

Board nomination and meeting

Board position

❖ [Confidential information redacted]

Board position

❖ [Confidential information redacted]

Second Board meeting

❖ [Confidential information redacted]

APNIC Foundation Australia (AFA)

- [Confidential information redacted]

Projects Update



SWITCH SEA*



2020 — 2021



DFAT — Australia



Viet Nam, Thailand, Cambodia and The Philippines



USD 336,000



Leadership development for 100 women in South East Asia:

- Community engagement started
- Local coordinators being considered

Pacific Technical Training



2019 — 2021



DFAT — Australia



Fiji, Solomon Islands, Tonga and Vanuatu



USD 336,000 – additional USD 215,000 in 2020 Q2



Moved to full virtual implementation

Myanmar University Network Training



Confirmed for 2020



KDDI Foundation (Japan)



Myanmar



To be determined



Full cost recovery for APNIC for two virtual workshops – routing and information security

PNG Technical Training



2018 to 2021 — **extended to March 2021**



Asia Foundation (USA); DFAT (Australia); MFAT (New Zealand)



Papua New Guinea



USD 451,731 — The largest training and technical assistance investment APNIC has been able to deliver for any APAC economy



24 events including 17 workshops, APNIC46 and APRICOT2020; 248 participants out of 96 organizations (including 22 APNIC members) completed 386 courses. PNG CERT established; PNG IXP supported and briefings for establishment of PNGNOG conducted.

ISIF Asia

- ❖ **107 innovative initiatives** in **24 economies** (79 grants and 28 awards by August 2020)
- ❖ **USD 3.64 million** allocated from APNIC, IDRC, Sida, The Dot Asia Organization, ICANN and APIA.
- ❖ **WSIS Champion 2018 and 2019**
- ❖ 2020 process selected four projects (USD 120,000 from APNIC), including an additional USD60,000 allocated to support two projects.
- ❖ Due diligence in progress.

The 2020 Network Operations Research Grants support the development of an independent Internet research community in the Asia Pacific, funding four projects focused on the availability, reliability, and security of the Internet



ISIF Asia Grant Recipients 2020

Four projects from four economies receive USD 30,000 each

Network Operations Research Grants

- 1. Open Lawful Intercept for Asia Pacific:**
University of Waikato. New Zealand
- 2. IPv6 Deployment at Enterprises:** India Internet Engineering Society. India
- 3. Collaborative Honeynet Threat Sharing Platform:** Swiss German University. Indonesia
- 4. Experiment and improve reinforcement learning algorithms to enhance anomalous network behaviour detection:** TeleMARS Pty Ltd. Australia

Project proposals under discussion Foundation 2021

❖ [Confidential information redacted]

APIDT funding in 2021

❖ [Confidential information redacted]

Project proposals under discussion

❖ [Confidential information redacted]

Funding Overview



Funding received 2020

Year	Donor	Origin	Project	AUD	USD
2020	DFAT	AU	Pacific Technical Training (3 rd tranche)	300,000†	215,290†
2020	DFAT	AU	Pacific Technical Training (2 nd tranche)	200,000	126,890
2020	APNIC	AU	ISIF Asia	141,473†	101,526†
2020	JPNIC	JP	RPKI Project Funding	33,891	20,222
2020	DFAT	AU	SWITCH SEA	500,000*	317,670*
Total				1,175,364	781,598

Funding received 2019

Year	Donor	Origin	Project	AUD	USD
2019	DFAT	AU	Pacific Technical Training	200,000	136,504
2019	KDDI Foundation	JP	Myanmar University Training		29,144
2019	APNIC	AU	ISIF Asia	160,000	115,000
2019	DFAT	JP	Technical Training in PNG	140,000	100,408
2019	DFAT	AU	Pacific CERTs development (3 rd tranche)	29,783	21,151
Total				329,783	402,207

Funding received 2018

Year	Donor	Origin	Project	AUD	USD
2018	TAF	US	Technical training, IXP and CERT development in PNG	476,000	343,354
2018	DFAT	AU	Pacific LEA training	108,000	81,486
2018	DFAT	AU	PNG CERT development	75,000	56,506
2018	DFAT	AU	Pacific CERTs development (2 nd tranche)	100,000	77,126
2018	APNIC	AU	ISIF Asia	160,000	118,410
2018	APNIC	AU	ISIF Asia Remaining Funds	76,896	54,281
Total				995,896	731,162

Funding received 2017

Year	Donor	Origin	Project	AUD	USD
2017	DFAT	AU	Pacific CERTs development (1 st tranche)	100,000	73,819
2017	APNIC	AU	ISIF Asia	160,000	122,800
2017	IDRC	CA	ISIF Asia	103,000	79,376
2017	Internet Society	US	ISIF Asia	44,000	33,333
Total				407,000	309,328

Year	AUD	USD
2017	407,000	309,328
2018	995,896	731,162
2019	329,783	402,207
2020	1,175,364	781,598
Grand Total	2,908,043	2,224,295

Questions?

Thanks!



Agenda Item 14

NRO NC election procedures

NRO Number Council (NC) Election Procedures 2020

APNIC 50

NRO NC Election 2020

- One vacant seat on NRO Number Council
 - Two-year term from 1 January 2021 to 31 December 2022
- Call for nominations
 - Open from 3 June to 3 August 2020
- Online voting available to both APNIC Members and APNIC 50 conference attendees who meet the voting criteria
 - Via APNIC Login
- See: <https://conference.apnic.net/50/elections>

APNIC Member Voting

- APNIC Member is entitled to one vote, as an organization
- Corporate Contacts and Contacts with voting rights can vote using the BigPulse voting system
- Voting period
 - Started: 12:00 (UTC +8), Thursday, 24 August 2020
 - Ends: 13:30 (UTC +8), Thursday, 10 September 2020

Eligible Meeting Attendee Voting

- Each eligible APNIC 50 attendee is entitled to one vote, as an individual
- Attendee who meets the following criteria can vote using the BigPulse voting system:
 - Registered for APNIC 50 by 11:00 (UTC +8), Tuesday, 8 September 2020, AND
 - Registered and attended at least one of the eight previous APNIC meetings (APNIC 42 – 49)
- Voting period
 - Starts: 11:00 (UTC +8), Thursday, 10 September 2020
 - Ends: 13:30 (UTC +8), Thursday, 10 September 2020

Declaration of Results

- At the close of voting, the Election Officers will hold an online meeting with the Scrutineers, download the election results and email the results to the Election Chair in the presence of the scrutineers
- The election results will be announced at 14:25 (UTC +8) today, 10 September 2020
- The Election Chair will also disclose:
 - Notice of any disputes and resolutions
 - Disclosure of any communication from the Election Scrutineers regarding any anomaly or issue

Declaration of Results (example)

Rank	Candidates	Votes
1	Candidate B	299
2	Candidate D	200
3	Candidate C	111
4	Candidate A	41
	Total votes	651

- Similar format as EC election during APNIC 49

APNIC

Poll Result

APNIC 49

Report date: Friday 21 February 2020 13:35 AEST

APNIC Executive Council Election 2020

As at Poll close: Friday 21 February 2020 13:30 AEST
Vote counting method: V1 FPTP (first-past-the-post)
Ranked by votes

Rank	Candidate	Votes
1	Sumon Ahmed Sabir	4135
2	Kams Yeung	3524
3	Achie Atienza	3067
4	Pankaj Chaturvedi	1323
5	Jamalul Izza	1139
6	Swasthik Gopinathan	156
7	Paul Vinton	154
8	J. Maurice	105
Total votes:		13603

Results generated by [BigPulse Online Voting](#)

Election Chair

- Munir Hasan as Election Chair
 - Appointed by the APNIC EC
 - Independent from any APNIC Member, or candidate
 - Has no interest in the election results
- Responsibilities:
 - Oversee the election process
 - Appoint the Election Scrutineers
 - Declare the election results
 - Resolve disputes

Election Officers

- Andre Gelderblom and Connie Chan
 - Appointed by the APNIC EC
 - Selected from APNIC Secretariat staff
- Responsibilities:
 - Administer the call for nominations
 - Manage the voting processes
 - Retrieve the online voting results
 - Report the results to the Election Chair
 - Answer queries from Members and voters

Election Scrutineers

- (Add names here)
 - Appointed by the Election Chair
 - Selected from staff of Internet organizations such as RIRs, ICANN, and ISOC who are present at the meeting
 - Do not vote and must be independent from any APNIC Member, or candidate
- Responsibilities:
 - Observe the downloading of election results by the Election Officers
 - Notify the Election Chair in case any anomaly or issue is identified

Notice of Dispute

- Any complaint regarding the conduct of the election must be lodged in writing with the Election Chair and be lodged no later than one hour before the scheduled Declaration of the Election
- Notices may only be lodged by Nominees or Members through their authorized voting representatives by email to election-chair@apnic.net
- The Election Chair shall resolve the dispute at his discretion

QUESTIONS?

Agenda Item 15

Review of APNIC 50 virtual conference

APNIC 50 – Initial Insights

APNIC EC Meeting
11 September 2020
Online

Overall Attendance

Day 1 343

Day 2 274

Day 3 224

Total 473

48 Economies

+ YouTube
659

Session Attendance - Day 1

	Zoom	YouTube	Total	Timeslot Total
Opening Ceremony and Keynote	229	101	330	330
Keynote 2 and Tech Session 1	149	66	215	329
Coop SIG	81	33	114	
Tech Session 2	118	48	166	263
NIR SIG	72	25	97	
Tech Session 3	106	32	138	246
Products and Services	71	37	108	

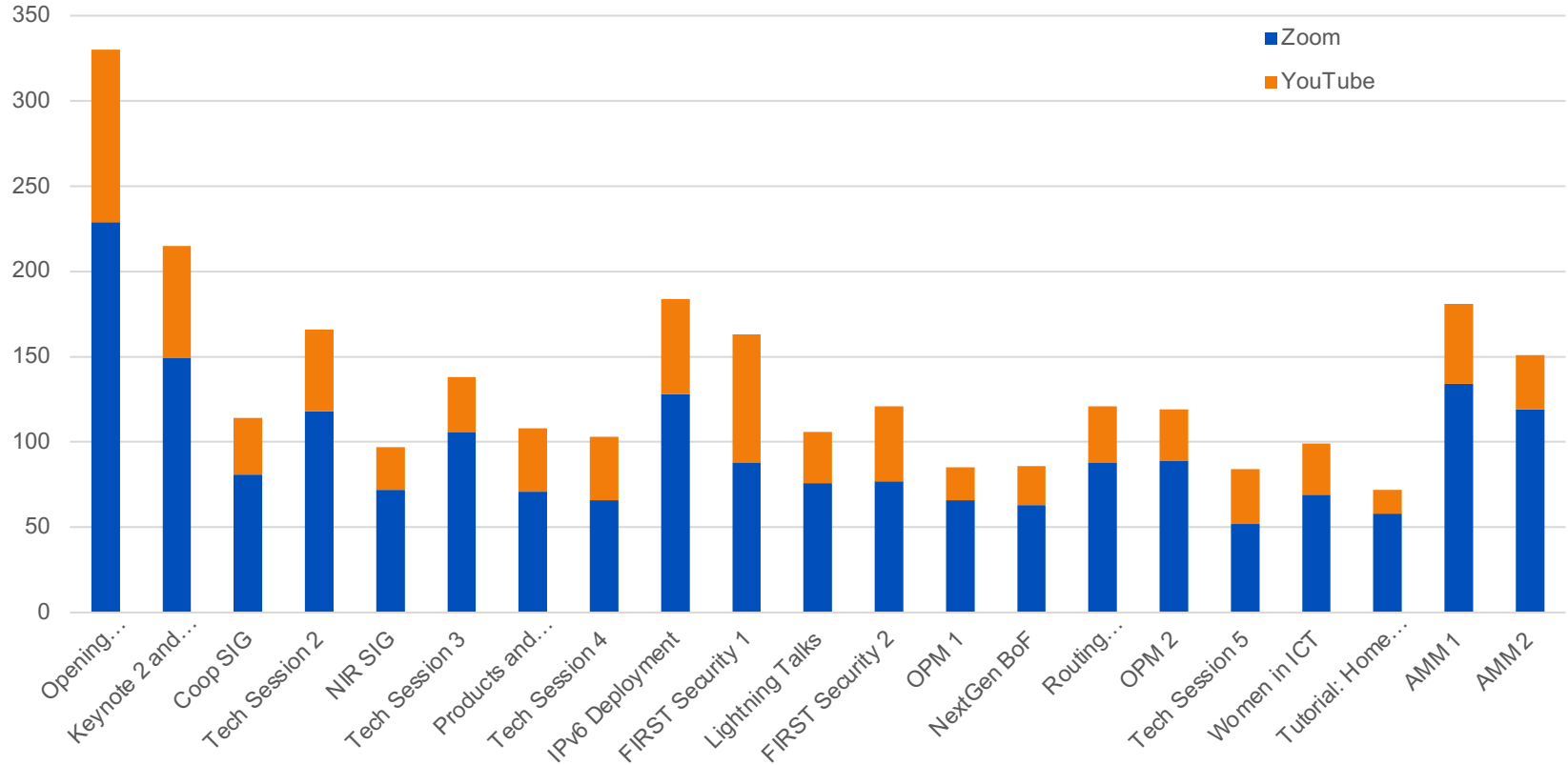
Session Attendance - Day 2

	Zoom	YouTube	Total	Timeslot Total
Tech Session 4	66	37	103	287
IPv6 Deployment	128	56	184	
FIRST Security 1	88	75	163	269
Lightning Talks	76	30	106	
FIRST Security 2	77	44	121	206
OPM 1	66	19	85	
NextGen BoF	63	23	86	207
Routing Security SIG	88	33	121	

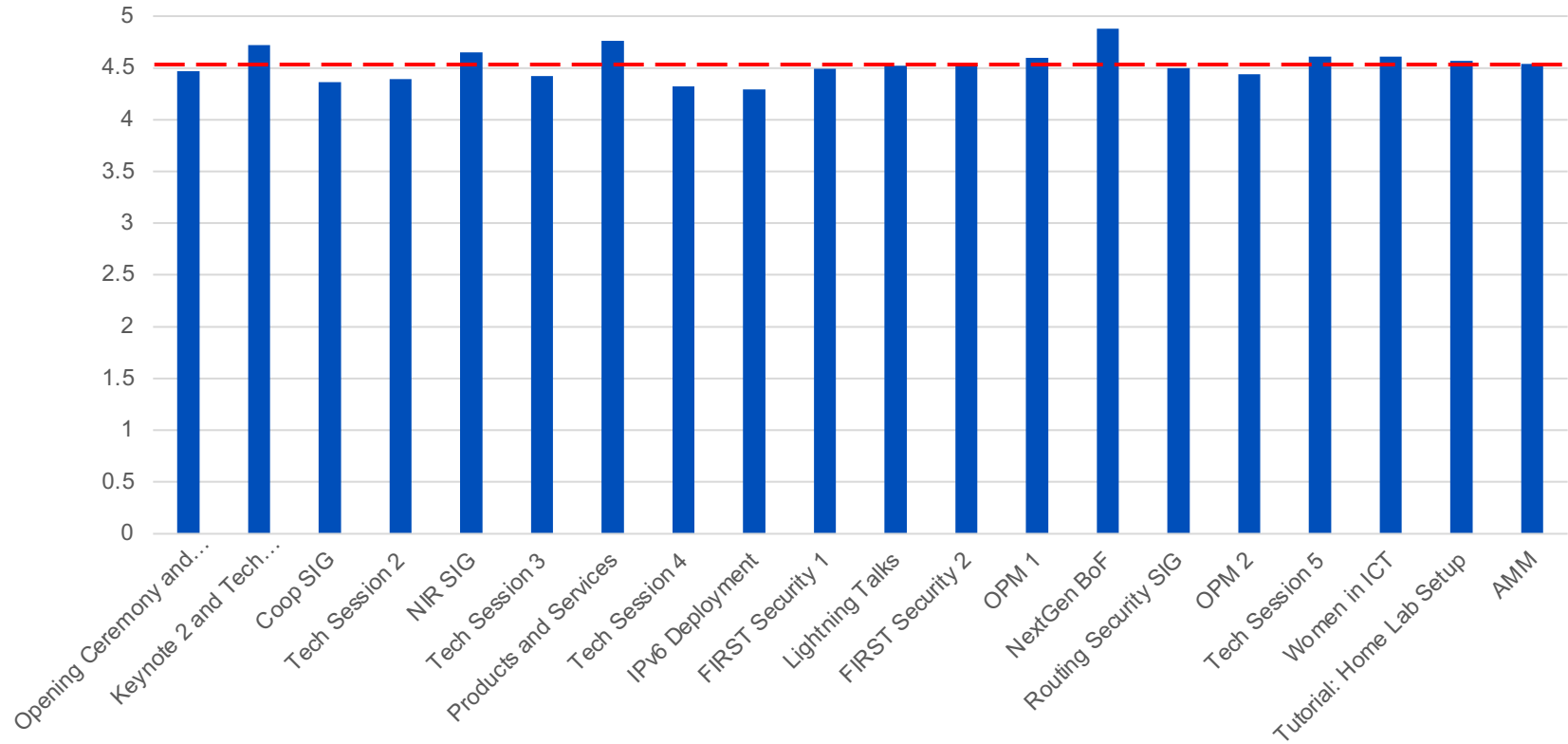
Session Attendance - Day 3

	Zoom	YouTube	Total	Timeslot Total
OPM 2	89	30	119	203
Tech Session 5	52	32	84	
Women in ICT	69	30	99	171
Tutorial: Home Lab Setup	58	14	72	
AMM 1	134	47	181	181
AMM 2	119	32	151	151

Zoom + YouTube



Session Ratings



What worked?

- NFH made an enormous difference
- Staff roles + preparation and training – smooth production
- Two parallel tracks can work
- Speakers were present and mostly on time
 - Good back channel communication
- Offering voice and chat for Q&A
 - Preference was text, but value of voice was apparent in Policy SIG and other SIGs
- The main social event
- Registration hurdles ensured there were no incidents
- Stenos and transcript worked smoothly remotely

What can be improved?

- Security precautions of logging into the website confused some attendees
- Confusion on SSO registration and conference registration
- Timezone support on the schedule – help people identify what is live
- Hopin video not great – not ready for prime time yet
 - New ideas needed to cover features not available in Zoom
- Separate conference and social area added extra steps and sense of separation