2016 APNIC Survey Report

Asia Pacific Network Information Centre

Conducted and prepared by Survey Matters.



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Introduction and Methodology As a Member-based organisation, the APNIC Executive Council and Secretariat conducts Member research to collect feedback on its performance and gather ideas for future strategic planning.

The Asia Pacific Network Information Centre (APNIC) survey process comprises a series of focus groups across the region, interviews with interested respondents and 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 (2) years, and is in its ninth iteration.

The APNIC 2016 Survey was conducted between the 5th of July and the 5th of August 2016 to gain feedback from APNIC Members and other Stakeholders (Members of an NIR, or others involved in the Internet community) about APNIC services, the challenges they face and where APNIC can assist. The survey helps the APNIC Executive Council (EC) and Secretariat to understand the needs and wishes of the community and the results are used to guide decisions on future priorities and developments.

The 2016 Survey was conducted by Survey Matters, a research agency specialising in research for memberbased 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. **No identifying data has been provided to APNIC.**

This report provides the full feedback from the online survey, and, where appropriate, incorporates feedback from the focus group report.

Response Rates and Sample

Following a comprehensive communication and survey distribution program, 1,365 responses were received and, after data cleansing, 1,175 responses remained. The sample size provides 95% confidence that results are within +/- 5% of presented figures.

Of the responses received, 68% were received from APNIC Members or Account Holders. The remaining 32% were from Members of NIRs within the APNIC subregion 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 2014, only 4% were from outside the Asia Pacific.

A full breakdown of the survey sample can be found on Pages 13, 14 and 15, and provides response counts for each economy, alongside respondents' organisation classification and job role.

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.

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Focus Groups

The survey instrument (online survey form) that forms the basis of this 2016 APNIC Survey Report was developed following a series of focus group consultations held in April and May 2016. Conducting focus groups 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 an online survey.

Face to face focus groups were conducted in twelve (12) economies, with a total of fifteen sessions conducted. One online focus group was also held, giving a total of sixteen focus groups in the thirteen locations below:

- Bangkok, Thailand
- Beijing, People's Republic of China
- Brisbane, Australia
- Colombo, Sri Lanka
- Delhi, India
- Hong Kong, SAR
- Mumbai, India
- New Zealand (online)
- Phnom Penh, Cambodia
- Seoul, South Korea
- Singapore
- Tokyo, Japan
- Yangon, Myanmar

The full Focus Group Report is available at apnic.net/survey.

Where relevant, focus group quotes and themes are referenced in this report.

Survey Instrument (online survey form)

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

As in 2014, the survey instrument comprised of two (2) separate surveys; one designed for Members and Account Holders of APNIC, the other for Members of an NIR or other interested Stakeholders.

The survey had several sections:

- Participation and Service Satisfaction
- Industry Challenges
- IPv6 Readiness
- Training and Technical Assistance
- Policy Development
- Resource Allocation, External Relations & New Services
- Member Engagement

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 the this survey and that conducted in 2014.

The 2016 survey questionnaire was designed primarily as a quantitative instrument, but respondents were also given opportunities to provide feedback in their own words. The addition of these are used throughout this report to add depth to the statistical results.

Communication and Distribution

The survey was designed as an anonymous online instrument, and distribution 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. While 1,365 responses were received, after investigation 190 responses 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 from the same IP address where the information regarding the prize draw was the same.
- Removal of records from the same IP address where the respondent provided data regarding relationship with APNIC and country of origin that was inconsistent with the IP address and location data.

Survey Analysis

When analysing the survey data, we have cross tabulated the results 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 on Page 13, and in Appendix A.

Differences in the opinions and behaviours of respondents based on their APNIC relationship, subregion 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 or as a percentage of respondents who selected a particular option. Where possible and appropriate, a full frequency distribution is shown. Where comparisons to the 2014 Survey can be made, mean scores are provided. Where mean scores are given, standard deviations are also provided.

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
- Score of 4 out of 7 is neutral
- Scores of 1, 2 and 3 out of 7 are negative

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

Executive Summary

Overview of results

APNIC Services

Overall, respondents are very satisfied with APNIC service provision with a majority believing APNIC provides high quality and valuable services. Specifically, 92% of respondents provided satisfaction ratings of 5 or higher for service quality and 90% for service value.

Eighty-four percent (84%) of respondents agreed that APNIC is respected in the Internet community. A large number also indicate that they speak highly of APNIC, many without being asked, a result also reflected in focus group discussions about APNIC performance.

Respondents who had used the helpdesk, technical assistance services, and those who had personally met with an APNIC representative rated APNIC services most highly. The fast and professional service provided by staff was often cited. Respondents also rate their experience of the core APNIC services of IP address applications and allocations, the Whois database, MyAPNIC and reverse DNS services as positive.

Training

While only 22% of respondents used APNIC training over the last two years, most believe it is an important APNIC function and it was a consistent theme across most free text comments about ways in which APNIC could best serve respondents.

Demand for local language and in-country training and support is strong. More advanced training on network security and IPv6 implementation planning are the topics that respondents indicated would provide them with most benefit.

Challenges

The 2016 survey process asked about the challenges facing respondents in the Internet community, and about how APNIC could assist with them, if at all.

The survey found that security is the biggest issue facing respondents, with 41% indicating that network security is one of the three biggest challenges in their delivery of Internet related services. DDoS attacks and other security breaches also concern respondents. A lack of IPv4 addresses remains a concern for many respondents. While a large majority of respondents think that APNIC can play a role in helping them to get more IPv4 addresses, only half of all respondents believe APNIC can help with security related issues.

Opinion is divided between respondents from developed economies and those of lesser developed economies about whether APNIC has a role to play in helping to address the challenges. For instance, respondents from LDEs and developing economies were significantly more likely to think that APNIC can help with security related issues than those from developed economies.

IPv6 Readiness

The survey found that deployment of IPv6 is mixed across APNIC sub-regions.

Respondents suggested that support from APNIC in the form of more advanced training, case studies and knowledge sharing would most help them transition to or deploy IPv6. Many also suggested that APNIC has an important role to play in promoting the benefits of IPv6 to customers, management and decision makers.

Collaboration, Knowledge Sharing and Training

A prominent theme in the 2016 Survey was that APNIC could help respondents by facilitating collaboration and knowledge sharing across the region. Suggestions about information sharing were most commonly provided in response to questions about how APNIC might assist respondents with their challenges and the transition to IPv6.

When asked to indicate in their own words how APNIC can assist respondents with the challenges they face in providing Internet related services, 31% of comments mentioned the provision of case studies, holding forums and seminars and sharing knowledge between member organisations across the region. With all aspects of security of concern to respondents, many felt that sharing of information, awareness programs, best practice and advanced training courses about security related issues would help.

Respondents from LDEs indicate a greater reliance on APNIC to assist them with technical knowledge, training and overall capacity building than developed or developing economies. However, there is also acknowledgement from more developed economies that case studies, sharing of information and online and open forums would be of benefit.

Similarly, when asked to indicate the most effective way APNIC might assist organisations to transition to or deploy IPv6, 49% of respondents selected 'providing case studies and best current practice about IPv6' and 31% selected 'facilitate knowledge sharing between Member organisations on IPv6 deployment experiences.'

Both the 2016 focus groups and the survey findings also suggest that decision makers within Member organisations and the wider customer base appear unaware of the benefits of transitioning to IPv6, and that APNIC could assist by promoting its adoption to these groups.

Differences between Regions & Economies

Another important point to note from the results of the focus groups and the online survey is that of the differences that exist between respondents across sub-regions and economies.

In particular, the requirements of many of the LDEs are quite distinct from those of developing and developed economies, and LDEs rely more heavily on APNIC and others for practical assistance such as training, help desk and consultancy. In contrast, more developed economies place a greater value on APNIC online offerings – MyAPNIC, Whois etc.



Participation & Satisfaction

- Participation is strong, with 84% of APNIC Members and 62% of Members of NIRs or other Stakeholders having used APNIC services or participated in APNIC activities over the last two years.
- Participation varies across economies and sub-regions. For example, respondents from LDEs are much more likely to have interacted with APNIC via conferences or events (39%), and attendance at training (44%) than those from developed (14% and 9% respectively) or developing economies (21% and 22% respectively).
- Satisfaction with overall APNIC service provision is very high 92% of respondents rate service quality and 90% rate the value provided by APNIC services positively.
- The APNIC helpdesk, technical assistance services and personal meetings with an APNIC representative rate very highly. Ninety-one percent (91%) of respondents rate helpdesk assistance as positive. The fast and professional service provided by APNIC staff was often mentioned in comments provided by respondents in their own words.
- Respondents rate their experience of the core APNIC services highly. Ninety-three percent (93%) rate IP address applications positively, with 92% rating IPv4 allocations, the Whois database and reverse DNS services as positive.
- A majority (56%) of respondents believe that APNIC service delivery has improved over the last two years, with many mentions of the improved performance and functionality of online APNIC services. A further 43% believe it is unchanged. There were many comments that indicated that, while unchanged, APNIC had maintained consistently high service.
- Three quarters of respondents agreed that APNIC provides essential Internet resources that cannot be accessed elsewhere. Agreement that APNIC provides other services of value that cannot be found elsewhere in their economy, or that they use APNIC services because they are of higher quality that those they can access elsewhere, is slightly lower.

Challenges

- Many aspects of security appear to be respondents' biggest challenge. For instance, network security was ranked the number one challenge by 16% of respondents, with 41% ranking it in the top three most important challenges their organisation faces in providing internet related services. This was followed by DDoS attacks and phishing, spam, malware and ransomware, with 33% and 25% of respondents ranking these issues within the top three challenges they face respectively.
- Obtaining more IPv4 addresses was ranked within the top three most important challenges by 22% of respondents. However, 80% of respondents indicated they thought APNIC had a role to play in helping them address the challenge.
- Sixty-one percent (61%) of respondents believe that the APNIC EC and Secretariat understand the challenges their organisation faces. Respondents in LDEs were significantly more likely to believe APNIC understands their issues (78%) than those in developed (49%) or developing (65%) economies.
- Just over half of respondents believe that APNIC can help with their biggest challenges network security (54%) and DDoS attacks (53%).

IPv6 Readiness

- Fifteen percent (15%) of survey respondents have IPv6 fully deployed, with 21% indicating it is deployed in their core networks. A further 29% of respondents have a deployment plan.
- Respondents in developed economies are the least likely to be ready, or have plans to deploy, IPv6. Fifty-two percent (52%) of respondents in developed economies have either deployed, or plan to deploy, IPv6 compared to 73% of respondents in LDEs.
- Lack of demand from customers and customers not being ready were the factors most often included in the top three challenges affecting full IPv6 deployment by 46% and 36% of respondents respectively.
 - Twenty-seven percent (27%) of all respondents cited no obvious technical or business benefits to adopting IPv6 among their top three challenges affecting deployment, particularly in Oceania where 36% of respondents included it within the top three factors affecting their ability to deploy IPv6.
- Respondents indicated that the most effective ways in which APNIC could assist the transition to IPv6 were providing case studies and best practice (49%), more advanced IPv6 training (46%) and promotion of the benefits to customers (38%) and to management and/or decision makers (39%).

Training

- Training is seen as an important APNIC service by 83% of respondents. Further, when asked to suggest in their own words the most effective way APNIC might help them with their challenges, 39% of respondents cited training and/or more advanced training.
- Only 20% of respondents had undertaken APNIC training in the last twelve months. Free text comments suggest that location and the costs associated with attendance are barriers to participation.
- While 81% of respondents agreed that APNIC training represents value for money, there was also support for the notion of providing subsidies where necessary. Ninety-two percent (92%) of respondents from LDEs agreed that APNIC should subsidise training
- 72% of respondents agree APNIC should seek additional external funding resources to build training and technical assistance services.
- Participants' ratings of APNIC training services are high. Ninety percent (90%) of respondents ratings were positive when asked if they agreed that APNIC provides useful and relevant training. Eighty six percent (86%) agree that training is provided in a suitable format.
 - The most commonly selected topic for potential APNIC training was network security -70% of respondents indicated that if APNIC could support their organisation with training, extended technical workshops or technical assistance, network security would be the topic that would most assist their organisation. More than half (55%) of respondents indicated that training focused on IPv6 deployment planning would also help their organisation.

Key findings



Policy Development

- While the number of respondents who indicated they had participated in the APNIC Policy Development Process for Internet Number Resources was very low, those who did provided more positive feedback about their involvement than in 2014.
- Overwhelmingly, free text feedback suggests a lack of awareness is preventing participation. Many respondents suggested APNIC should provide more information on what is involved and how to participate.

Resource Allocation, External Relations & New Services

- Respondents indicated that of the APNIC budget remaining after Corporate Operations (which is fixed at 20%), 33% should be allocated to Member Services, 27% to Regional Development and Outreach Services and 20% to Global Cooperation. However, high standard deviations should be noted as an indication of the variability of respondents' answers to this question.
- Consistent with 2014, Network Operator Groups (NOGs), Asia Pacific and global Internet technical organisations are the groups respondents believe APNIC should focus its external relations efforts on.
- There was support for the establishment of local APNIC offices or agencies, with 60% of respondents attaching a degree of importance to the idea. Support was strongest in South Asia (80%) and in LDEs (76%), with training being the service most often mentioned that could be delivered locally.
- Forty three percent (43%) of respondents indicated a willingness to contribute to trend and benchmark data on behalf of the industry. A further 37% wanted more information before deciding. Support was lower in developed economies, with comments suggesting concerns around privacy as the main reason.

Member Engagement

- Eighty-four percent (84%) of respondents agreed that APNIC is respected in the Internet community.
- Seventy percent (70%) of respondents agreed that they are provided with enough opportunities to contribute to APNIC activities.
- Thirty-one percent (31%) of respondents indicate that they tend to speak highly of APNIC when they are asked, and a further 10% speak highly of APNIC without being asked.

Survey Sample

A total of 1,175 responses were analysed, with an even distribution of responses across APNIC sub-regions.

The following response counts and percentages were received from economies across the four APNIC subregions. The individual economies included in each subregion are outlined on the next page.

- 268 responses (23%) from East Asia
- 283 responses (24%) from Oceania
- 257 responses (22%) from South East Asia
- 321 responses (27%) from South Asia
- 46 responses (4%) from outside the Asia Pacific region

Of these responses, the largest number comes from Australia (202 responses), China (170 responses) and India (142 responses). A large number were also received from Bangladesh (94 responses).

As outlined in the Methodology, survey data has been cross – tabulated and analysed according to APNIC subregions as shown above. However, due to the large number of responses received from China and Australia, data for East Asia and Oceania in large part reflect the views of respondents in these particular economies. As in 2014, economies have also been classified as Developed, Developing and Least Developed Economies (LDEs) according to the United Nations classifications*.

The following samples are available for each classification:

- 170 (14%) from LDEs
- 316 (27%) from Developed Economies
- 689 (59%) from Developing Economies

This provides a very similar composition of responses as in 2014, albeit with slightly smaller percentage (-3%) of responses from LDEs.

Responses by sub-region and economy

East Asia		
CN	170	13%
нк	39	3%
JP	24	2%
КР	0	0%
KR	2	0%
MN	9	1%
МО	0	0%
TW	24	2%
Sub-total	268	23%

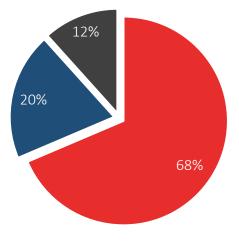
Oceania		
AS	1	0%
AU	202	15%
СК	202	0%
FJ	4	0%
FM	1	0%
GU	1	0%
KI	0	0%
	0	0%
MH	<u>0</u>	
MP		0%
NC	2	0%
NF	0	0%
NR	1	0%
NU	1	0%
NZ	47	4%
PF	0	0%
PG	10	1%
PW	2	0%
SB	1	0%
ТК	1	0%
ТО	2	0%
TV	1	0%
VU	2	0%
WF	0	0%
WS	1	0%
Sub-total	283	24%

South East Asia		
BN	1	0%
СХ	0	0%
ID	49	4%
кн	15	1%
LA	4	0%
MM	11	1%
MY	39	3%
РН	43	3%
SG	27	2%
ТН	18	1%
TL	2	0%
VN	48	4%
Sub-total	257	22%

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South Asia		
AF	5	0%
BD	94	7%
BT	7	1%
IN	142	11%
10	0	0%
LK	10	1%
MV	1	0%
NP	26	2%
РК	36	3%
Sub-total	321	27%
Non APNIC sub-		
region		
AL	1	0%
AT	1	0%
BE	3	0%
BF	1	0%
BJ	1	0%

Total	1,175	
Subtotal	46	4%
US	16	1%
SI	1	0%
SE	2	0%
RO	1	0%
NO	1	0%
NL	6	0%
NG	1	0%
IE	1	0%
GB	2	0%
FR	3	0%
FI	1	0%
DE	1	0%
CA	3	0%
53	1	070

Respondent Profile



Q. 4, n=1,175

- APNIC Member or Account Holder
- Member of a NIR in the APNIC region
- Other stakeholder

Q. 43 - Position

Sample Size	1,173
	_,
IT/ICT Manager or equivalent	34%
Technical Operations	29%
Executive Director/ Managing Director/ CEO/CFO/CTO	19%
Administration	6%
Other	6%
Business Development	3%
Commercial Operations	2%
Software Development	2%

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

Detailed Results

Participation & Service Satisfaction

Respondents are satisfied with APNIC performance. Participation and satisfaction varies across sub-regions.

The 2016 APNIC Survey found that respondents are largely satisfied with APNIC's delivery of services.

Eighty-four percent (84%) of APNIC Members used APNIC services or participated in APNIC activities over the last two years, and 62% of Members of NIRs or other Stakeholders had also interacted with APNIC over the same timeframe. In summary, over the last two years:

- 75% of all respondents indicated they had visited the APNIC website
- 59% of respondents had used MyAPNIC.
- 53% of respondents had applied for IP addresses or AS number resources
- 49% of respondents had accessed the APNIC Whois Database service.
- 45% of respondents had received IP addresses or AS number resources.
- The APNIC Blog was read by over 40% of all respondents.
- Twenty-two percent (22%) of all respondents indicated they had attended an APNIC conference, event or training course.

There were some significant differences in the participation profiles of respondents from different APNIC sub-regions.

Overall, satisfaction with individual services is very high. Over 90% of respondents rated their experience of the core APNIC services of IP address applications and allocations, the Whois database, reverse DNS and technical and helpdesk assistance as positive.

Respondents are most satisfied with the personal services and customer support provided by APNIC. Many free text comments referred to the high quality of the customer service and fast turn-around provided by the APNIC helpdesk.

Respondents in South Asia are the most satisfied with APNIC services overall, with 96% rating both service quality and value positively. In South East Asia, respondents ratings for service quality were 94% and service value were 93%, whilst Oceania respondents rated service quality and value at 92% and 88% respectively. Ratings from respondents in East Asia for service quality and value were significantly lower than the other sub-regions with 80% providing positive ratings.

When looked at from an economic development perspective, respondents from LDEs were more likely to indicate that they had used most of the APNIC services presented, suggesting greater reliance on APNIC for support and assistance than respondents in the more developed economies. In order to measure satisfaction with APNIC service delivery, respondents were asked to indicate how often they used APNIC services or contacted APNIC over the last two years.

APNIC Members were significantly more likely to have used APNIC services or contacted APNIC for support than other respondents. Over half (52%) had used an APNIC service or interacted with APNIC in some way between one and five times over the last two years.

This is slightly higher than in 2014 when 48% of APNIC Members and Account Holders had interacted with APNIC between one and five times.

Thirty-two percent (32%) of respondents indicated they had interacted with APNIC more than five times over the last two years, which is lower than in 2014. Also, 9% of respondents had no contact with APNIC over that time period, compared to 4% in 2014. With figures unavailable from the 2012 survey, it may be useful to track this over time as it could be an indication of the on-going need for services.

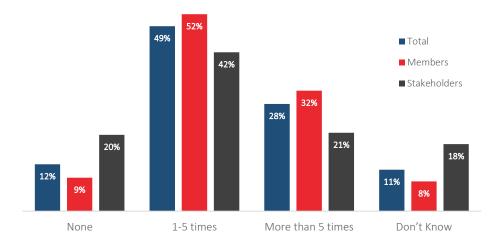
Respondents from Oceania and those from developed economies were the most likely to have interacted with APNIC, with 83% and 84% respectively indicating they had interacted with APNIC at least once.

Respondents from LDEs and developing economies were somewhat less likely to use APNIC services with 76% and 74% respectively having interacted with APNIC at least once in the past two years.

Similarly, respondents from East Asia (78%), South East Asia (74%) and South Asia (70%) were less likely than their Oceania counterparts to have used the services, contacted or interacted with APNIC at least once in the past two years.

9% of APNIC Members have had no contact with APNIC in the past two years, an increase of 5% since the 2014 Survey

Q 4 - # of times respondents have used an APNIC Service, contacted or interacted with APNIC in the past two years



(n = 1,175) (Presented to all respondents)

APNIC Service Usage

Q 5 - Participation	Total	Member	Stakeholder
Sample Size	1,030	735	295
Visited the website	75%	77%	71%
* Used MyAPNIC	59%	59%	0%
* Applied for IP addresses	53%	53%	0%
Used the Whois Database	49%	53%	39%
* Received IP addresses	45%	45%	0%
Read the blog	43%	41%	46%
* Contacted the helpdesk	33%	33%	0%
* Used reverse DNS	27%	27%	0%
** Contacted APNIC	22%	0%	22%
Attend conference/event	22%	21%	24%
Attended training	22%	22%	20%
Personally met with APNIC	17%	16%	22%
Attended presentation	15%	13%	22%
* Technical assistance	13%	13%	0%
* Transferred IPv4 addresses	12%	12%	0%
Participate SIGs/Meetings	7%	5%	11%
* Used RPKI services	5%	5%	0%
Policy Development	5%	4%	7%
None of these	2%	1%	5%
Other	2%	1%	4%

* Option not offered to respondents

** Option not offered to respondents

Respondents were next asked to indicate which APNIC services they had used.

Overall, 75% of respondents indicated they had visited the APNIC website over the last two years. Fifty nine percent (59%) also used MyAPNIC. Nearly half of respondents (49%) had accessed the APNIC Whois Database service.

Fifty-three percent (53%) of respondents had applied for and 45% had received IP addresses or AS number resources. Respondents in East Asia were significantly less likely to have applied for or received IP addresses or AS number resources from APNIC.

The APNIC Blog was read by over 40% of respondents. Those from LDEs were most likely to read APNIC content.

Only 22% of respondents said they had attended an APNIC conference or other event, or that they had attended an APNIC training course or online training.

A third of respondents had contacted the APNIC helpdesk over the last two years, while 13% had contacted the APNIC technical assistance team. Twenty-two percent (22%) of respondents contacted APNIC with a general query.

There were some significant differences in participation of respondents in different APNIC sub-regions.

Respondents from LDEs were more likely to indicate they had used many of the APNIC services from the list presented, suggesting greater reliance on APNIC for support and assistance than respondents in more developed economies. They are also significantly more likely to have attended an APNIC conference or event (39%), had a meeting with an APNIC representative (34%), or attended a presentation (24%) than those from developed or developing economies.

In contrast, respondents from developed economies were more likely to use the online services such as the website, MyAPNIC, the Whois database service and reverse DNS services. This may be because of greater experience with these services through technical knowledge or language fluency, although this was not tested. From a sub-regional perspective, Oceania respondents were the most likely to have visited the website, used MyAPNIC, the Whois database and reverse DNS services.

Respondents in South East and South Asia were more likely to attend training (27% and 32% respectively). Respondents in South East Asia were also more likely to have attended an APNIC conference or event in the last two years (33%) than respondents in other APNIC sub-regions.

Respondents in East Asia were the least likely to access services and participate in APNIC activities. In particular, East Asia respondents were significantly less likely to indicate they had applied for or received IP addresses or AS number resources, used the Whois database and MyAPNIC, or contacted the helpdesk or APNIC technical assistance team over the last two years.

Attendance at training courses was highest among respondents from South Asia and LDEs

Q 5	Total	LDEs	Developed Economies	Developing Economies	East Asia	Oceania	South East Asia	South Asia
Sample Size	1,030	155	278	597	235	247	227	276
Visited the website	75%	81%	82%	70%	65%	83%	76%	76%
Used MyAPNIC	59%	49%	64%	30%	23%	59%	39%	40%
Applied for IP addresses	53%	48%	44%	32%	20%	43%	44%	41%
Used the Whois Database	49%	49%	60%	43%	36%	58%	50%	48%
Received IP addresses	45%	45%	41%	25%	15%	41%	32%	36%
Read the blog	43%	54%	40%	41%	37%	42%	42%	50%
Contacted the helpdesk	33%	32%	28%	19%	11%	28%	26%	27%
Used reverse DNS	27%	20%	33%	13%	11%	32%	17%	16%
Handling your query	22%	3%	4%	8%	10%	3%	5%	7%
Attend conference/event	22%	39%	14%	21%	21%	15%	33%	21%
Attended training	22%	44%	9%	22%	16%	13%	27%	32%
Personally met with APNIC	17%	34%	10%	17%	13%	12%	21%	24%
Attended presentation	15%	24%	9%	16%	12%	9%	21%	18%
Technical assistance	13%	15%	11%	8%	2%	11%	11%	13%
Transf'd IPv4 addresses	12%	9%	10%	8%	9%	9%	10%	7%
Participate SIGs/Mtg's	7%	7%	6%	7%	9%	4%	7%	7%
Used RPKI services	5%	11%	3%	3%	1%	2%	4%	8%
Policy Development	5%	5%	3%	5%	7%	2%	5%	5%

Assessment of APNIC Services

Having identified the APNIC services used, the next question asked respondents to rate their satisfaction with those APNIC services, on a seven point scale from Poor to Excellent.

Results are presented below to show the mean scores. On the following pages comparisons are provided between different economy type and sub-sub-region, as well as ratings from the 2014 survey where they were able to be compared.

Overall, satisfaction with individual services is very high. The survey confirmed the feedback from the 2016 focus groups, and respondents are largely satisfied with the delivery of APNIC services and the role of APNIC in general.

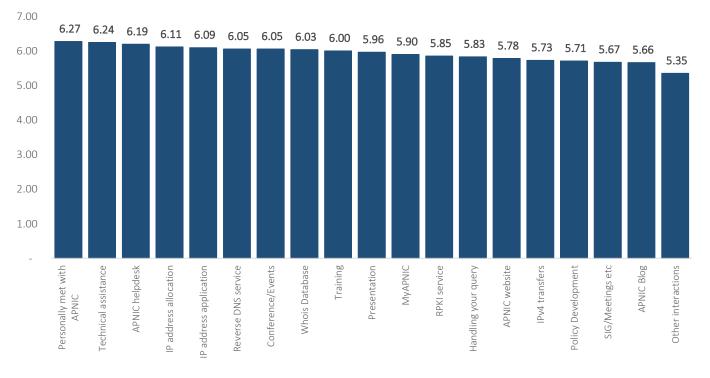
Respondents rating of their experience of the core APNIC services of IP address applications and allocations, the Whois database, reverse DNS and technical and helpdesk assistance are mostly unchanged from the 2014 Survey and remain positive.

Respondents are most satisfied with the personal services and customer support provided by APNIC.

Over 90% of respondents rated the service provided by the Technical Assistance Team and the APNIC helpdesk very highly (95% and 91% respectively). Of those respondents who had met personally with an APNIC representative, 92% rated the experience positively. Fast and professional service provided by APNIC staff was often mentioned in the free text comments.

Respondents were also very satisfied with their experience of IP address and AS resource application and allocation with 93% and 92% respectively providing rating of five or higher. Satisfaction with reverse DNS services and the Whois Database (both 92%) was also high.

"Blog, MyAPNIC, Technical Support Team, Live Chat... everything is more interactive and helpful."



Q 6 - Respondents ratings of their experience using APNIC services and activities.

Mean Score (base n = 1030, n - various) (Presented to all respondents)

Respondents' ratings of their experience using APNIC services and activities was consistent with the 2014 Survey.

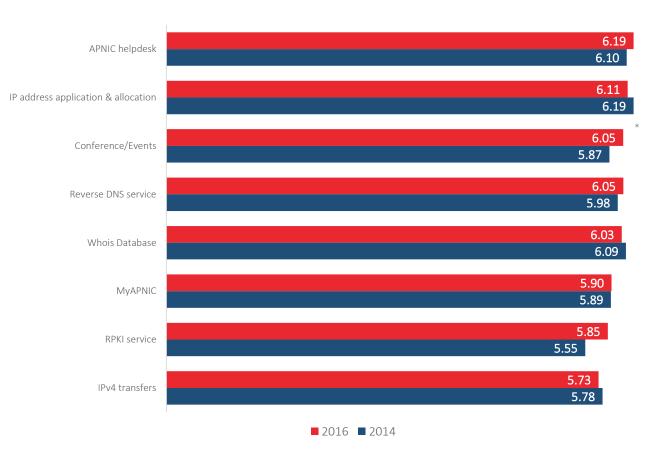
Several of the services that respondents were asked to rate were the same as those in the 2014 Survey and these comparisons are shown below.

The results show that respondents' ratings of their experience with APNIC service delivery is mostly unchanged.

While respondents' experiences of some services, such as APNIC helpdesk, conferences and events and RPKI services have improved, other services have stayed the same.

Q 6 - Respondents ratings of their experience using APNIC services and activities.

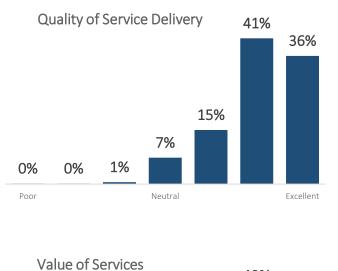
Mean Scores (base n = 1,175, n - various) (Presented to all respondents)

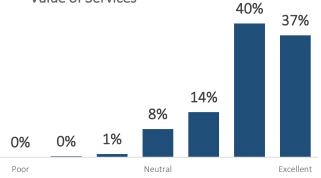


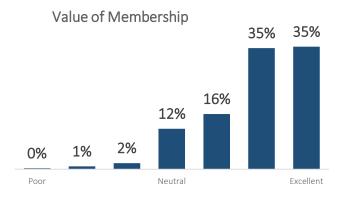
* Please note separate questions were asked in 2016. Mean score for IP address applications is 6.09, IP address allocation is 6.11

Overall Service Satisfaction

Overall Satisfaction with APNIC Services







Q 8 - Respondents ratings of the quality and value of APNIC services and Membership

(n =733) (Presented to APNIC Members only)

Respondents' ratings of APNIC service quality and value are positive, with South Asia respondents the most satisfied with APNIC services.

After rating their experience using individual APNIC services, respondents were asked to rate the overall quality and value of APNIC services and membership on a 7 point scale from Poor to Excellent.

Ninety-two percent (92%) of respondents rated service quality positively with 91% rating the value of services at a 5 or higher. Eighty-six percent (86%) also provided a rating higher than neutral for the overall value of their membership.

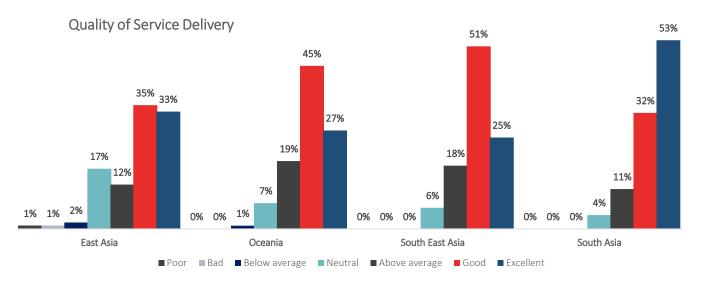
As can be seen on the next page, when responses are segmented by APNIC sub-regions, respondents in South Asia are the most satisfied with the services overall, with 96% rating service quality and value positively. Ratings for service quality and value from respondents in South East Asia (94% and 93% respectively), and Oceania (92% and 88% respectively) were also positive. These sub-regions provided significantly higher ratings than those provided by respondents in East Asia (both ratings were 80%).

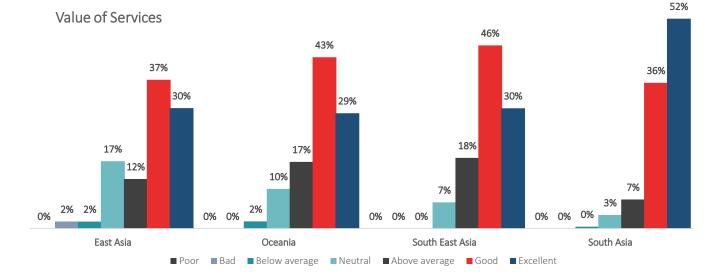
Respondents from East Asia were the least likely to provide a score of 5 or higher for APNIC service quality and value. Eighty percent (80%) of respondents from East Asia rated these positively.

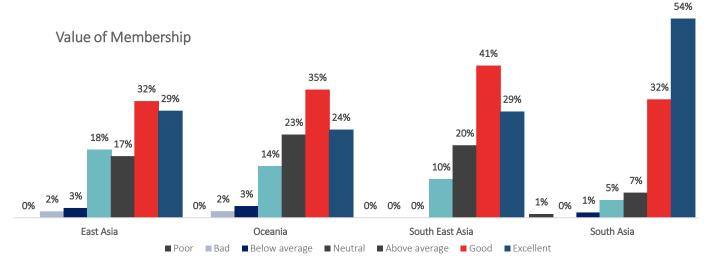
South and South East Asia respondents were also significantly more likely to be satisfied with the overall value provided by their Membership than respondents from the other two sub-regions. Ninety-three percent (93%) of respondents from South Asia and 90% of those from South East Asia rated the value of membership positively. This compares to 81% in Oceania and 77% in East Asia.

There is also a significant difference in the perception of overall membership value between the LDEs and developed economies. Ninety percent (90%) of respondents in LDEs rated the overall value provided by APNIC Membership as a 5 or above, compared to 88% of respondents in developing economies and 80% of respondents in developed economies.

Overall satisfaction by sub-region







Note: Figures may not sum to 100 due to rounding

26

The quality and value ratings respondents provided in 2016 are able to be compared to the ratings in 2014. Satisfaction has improved in South Asia, however there has been a slight fall in the mean scores provided in other APNIC sub-regions.

There is also a significant difference between the ratings of service quality and value provided by respondents in South Asia and those in other sub-regions.

While the mean score for service quality had fallen slightly in 2016, when asked directly about perceptions of improvement in service delivery over the last two years, respondents were very positive.

Please note that the rating of the value of APNIC services does not provide a direct comparison to 2014 due to slightly different question wording. This may have affected the relatively high value ratings in 2016, which provides ratings of service value only, whereas the 2014 figures includes mixed rating of service and membership value.

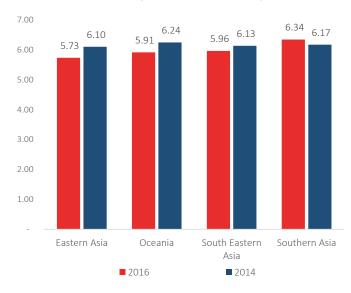
*Figures are provided here for indicative purposes.

Respondents ratings of the quality and value of APNIC services compared to 2014

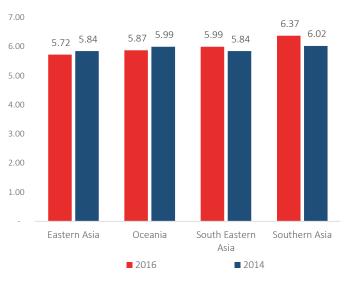
Quality of Service Delivery	Total	East Asia	Oceania	South East Asia	South Asia
Sample	733	113	222	153	207
2016	6.03	5.73	5.91	5.96	6.34
2014	6.15	6.10	6.24	6.13	6.17
Value of Services					
Sample	776	115	226	177	220
2016	6.02	5.72	5.87	5.99	6.37
*2014	5.91	5.84	5.99	5.84	6.02

Mean Scores, (n - 733) (Presented to APNIC Members only)

* Please note the question wording in the 2014 and 2016 surveys varied slightly, and as such comparisons should be treated as indicative only.



Quality of Service Delivery



Value of Services

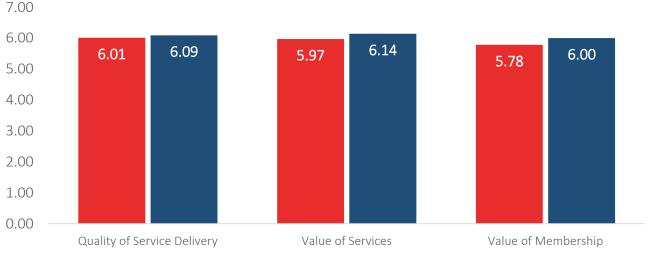
Comparison of respondents ratings of APNIC service quality and value provided in 2016 based on the number of interactions respondents had with APNIC, was also undertaken. While the number of interactions did not significantly affect the ratings provided for the service quality, more frequent users rated service value more highly.

Ninety percent (90%) of respondents who had between 1 and 5 interactions with APNIC over the last two years rated the value of APNIC services as above average or higher, compared to 92% of those respondents who had more than 5 interactions. Perceptions of the value of overall APNIC Membership also improved with greater contact.

Eighty-four percent (84%) of respondents with fewer than 5 interactions with APNIC over the last two years rated the Membership value highly, compared to 89% of respondents who dealt with APNIC more frequently.

Frequent users rated the value they received more highly.







Service Improvement

While a majority of respondents indicate that APNIC's service delivery has improved over the last two years, many respondents indicated that APNIC provides consistently high service.

After rating the individual services and the overall quality and value of APNIC service, respondents were then asked to rate any change in APNIC's service delivery over the last two years. Ratings were provided on a five point scale, from Declined significantly to Improved significantly.

Overall, a majority of respondents indicated that APNIC's service delivery had improved, with 23% rating it a significant improvement. And while many respondents indicated, like in 2014, that it was "business as usual", free text comments suggest that most believe they are continuing to receive the same high levels of service that APNIC has always provided.

Further, while a large number of respondents indicated that APNIC service delivery had remained consistent with previous years it should be noted that free text comments indicate many respondents who selected this option felt unable to answer the question because they had not used the services enough to provide a rating.

Very few respondents noted a decline in service levels, and the improvement ratings for both 2016 and 2014 are the same (56% and 57% respectively).

Respondents in South Asia are the most positive in their rating of APNIC's performance over the last two years. Seventy-eight percent (78%) of South Asia respondents indicated that service delivery had either significantly or slightly improved.

This compares to 30% of Oceania respondents who indicated that APNIC's performance had improved either significantly or slightly over the last two years.

Improvements in MyAPNIC and the website were noted in the free text comments within the survey and feedback from the focus groups.

Further improvements were requested during focus group discussions, with some respondents mentioning that having parts of the website or MyAPNIC available in multiple languages would assist them. In the free text comments respondents added in the online survey, there was again mention that more local or face to face training would assist.

Q 9 - Respondents rating of change in APNIC Service delivery over the last two years.

(n = 723) (Presented to APNIC Members only)

	Total	East Asia	Oceania	South East Asia	South Asia
Sample Size	723	113	219	150	203
Declined significantly	1%	1%	0%	1%	0%
Declined slightly	1%	4%	0%	0%	1%
Stayed the same	43%	41%	69%	33%	21%
Improved slightly	33%	34%	21%	42%	39%
Improved significantly	23%	21%	9%	24%	39%
Mean	3.76	3.71	3.37	3.87	4.17
Standard Deviation	0.83	0.87	0.67	0.82	0.78

Respondents provided several reasons for their feedback about APNIC's performance over the last two years.

Reflecting the individual service ratings, comments about the APNIC helpdesk and customer service were largely positive.

"All communications from APNIC helpdesk staff was of the highest level" Oceania

"Improved turn around times and more accurate information provided." Oceania

"Interaction with helpdesk team is excellent" South Asia

"The services response tend to be faster." South Asia

Several respondents suggested that there had been improvements to APNIC's website and online services.

"APNIC website, blog, MyAPNIC and Whois is now much more informative than ever before." South Asia

"The user interface on MyAPNIC is improved and seems an effort towards making it less complex." South Asia

"I had to send an email and wait for the answer before, but now I can use the chat on line." East Asia

While there was a high number of responses that suggested that APNIC service had stayed the same, many comments indicated that service from APNIC had always been good.

"Always been very much impressed with APNIC, no real area for improvement." Oceania

"APNIC's services has already been excellent since we first joined APNIC and that has not changed." South East Asia

"I always have received a very quality service in the past two years and before" South Asia

"We have always had fantastic service from APNIC." Oceania

It also appears that many of the responses suggesting APNIC service delivery had 'stayed the same' were from respondents with insufficient experience of dealing with APNIC to respond accurately.

"Don't use it enough to have noticed a change." Oceania

"I don't use the services provided often enough to provide a better judgement." Oceania

"We have not needed to have extensive contact lately so we could not say if it has gone either way." Oceania

"Yes, quality of APNIC's service delivery improved significantly over the past two years. I have noted a significant change in APNIC's website to provide online services to its members."

A majority agree that APNIC provides essential Internet resources that cannot be accessed elsewhere.

To test respondents' motivations for using or accessing APNIC services, three statements were included in the survey about APNIC providing essential Internet resources not available elsewhere, providing other services of value not available elsewhere in the respondents economy and whether they choose to use APNIC services because they were of higher quality than other services available. Respondents were asked to rate their agreement using a seven point scale from Strongly disagree to Strongly agree. Three quarters of respondents (75%) indicated agreement in some form that APNIC provides essential Internet resources that cannot be accessed elsewhere.

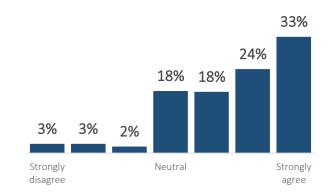
Respondents from developed economies were more likely to agree that APNIC provide essential Internet resources not available elsewhere than developing economies or LDEs. There were significant differences within the sub-regions, with strongest agreement that APNIC provides essential Internet resources not available elsewhere from respondents in Oceania (83%). Lower agreement levels in sub-regions with an in-country NIR possibly explains this result.

Results for the question exploring whether other services offered by APNIC were able to be found in respondents' home economies were less positive. Sixty-four percent (64%) of respondents provided positive ratings that APNIC offers services of value not available in their economy. There was no significant difference in the feedback provided from respondents in different sub-regions.

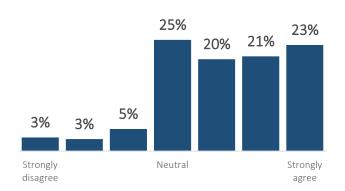
Sixty-one percent (61%) of respondents provided some form of agreement that they choose to use APNIC services because they are of higher quality than other services available.

This result seems at odds with most other feedback throughout the survey, where individual services provided by APNIC were given very positive ratings. Feedback in focus groups also praised APNIC for the generally high performance. It may be that the need for some of the improvements suggested to individual areas, or that lack of use of some APNIC services, may be reflected in this result.

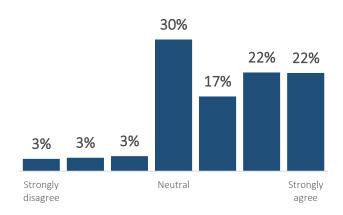
Respondents in LDEs were more likely to indicate that they choose to use APNIC services because they are of a higher quality than they can access elsewhere (74%) than respondents from developed economies (43%).



APNIC provides essential Internet resources not available elsewhere (Mean = 5.51, Std Dev = 1.49) (n=797) (Presented to APNIC Members only)



APNIC provides other services not available in my economy (Mean = 5.14, Std Dev. = 1.52) (n=796) (Presented to APNIC Members only)



I choose APNIC services because they are of higher quality (Mean = 5.10, Std Dev. = 1.50) (n=796) (Presented to APNIC Members only)

Stakeholder Satisfaction

Members of NIRs or other Stakeholders were only asked to rate their experience with the overall quality of APNIC's service delivery over the last two years. Ratings were provided on a seven point scale, from Poor to Excellent.

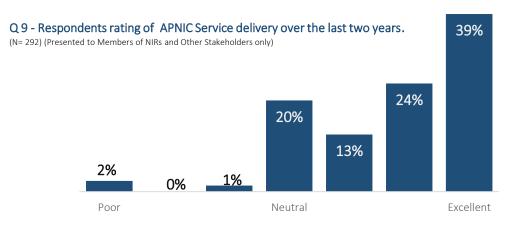
Seventy-six percent (76%) of these respondents rated APNIC's service delivery over the last two years positively. Very few respondents provided a negative rating.

Eighty-eight percent (88%) of respondents in Oceania rated APNIC services positively, however the small sample should be noted.

Respondents in South Asia were the next most satisfied group, with 83% rating APNIC services a score of five or higher. Fewer respondents from South East Asia (74%) provided a positive rating for APNIC service delivery.

There were no significant differences in ratings provided by respondents in the least developed, developing or developed economies.

A majority of respondents are satisfied with APNIC's service delivery over the last two years.



	Total	East Asia	Oceania	South East Asia	South Asia
Sample	292	117	25	74	69
Poor	2%	3%	4%	1%	1%
	0%	0%	0%	0%	0%
	1%	2%	0%	3%	0%
Neutral	20%	22%	8%	26%	16%
	13%	12%	8%	19%	6%
	24%	14%	36%	31%	30%
Excellent	39%	48%	44%	20%	46%
Mean	5.70	5.74	6.00	5.35	6.01
Standard Deviation	1.40	1.49	1.38	1.27	1.24

Respondents also provided reasons for their feedback about APNIC's performance over the last two years.

Most free text feedback from Members of NIRs or other Stakeholders was positive, with many respondents mentioning the professional, knowledgeable and helpful staff.

"We consider APNIC a critical Stakeholder and partner that conducts itself with professionalism and generously shares its views and expertise." Oceania

"The staff are very professional, approachable and are always willing to help. They are experts in their own areas of expertise and are always on hand to share their knowledge and experience." Oceania

"APNIC is a very professional organization. I have interacted with APNIC and its representatives in the past in various roles in my career. APNIC is dedicated to the improvement of the internet community in APAC. People in APNIC are knowledgeable and very helpful." South Asia

Several comments also mentioned the value provided by APNIC training, conferences and online reference materials.

"The APNIC training and conferences that I have attended were all excellent. Resource persons were real experts. Always a pleasure and a great learning experience to attend APNIC program/trainings/conferences" South Asia

"I have used the online resources, and it was of great help to me." Oceania

"I have visited APNIC website and blog and I found the information to be user-friendly and educational." South East Asia

"Some services of APNIC are useful for me, especially Whois database and APRICOT conference." South East Asia

Others mentioned the responsiveness of APNIC customer service.

"Support is very good and deployment is very fast." South Asia

"They are responsive and always helpful." South Asia

A few comments suggested areas that could be improved.

"Training and seminars are not regularly updated" East Asia

".. Due to language problem, I encounter difficulties assigning the IP address and setting. It will work if Apnic provide a Chinese website." East Asia

"APNIC staff interaction has always been extremely professional, friendly and helpful. APNIC is one of the few organizations for which are not just service providers, but a key Member of your community of practice."

Respondents' Challenges

Security is *the* challenge facing Member organisations.

Reflecting the focus groups discussions, respondents indicated that security is the major challenge that they face.

To test the feedback from the focus group discussions, a section was included in the online survey about the challenges that respondents face in providing Internet related services, products and activities. Respondents were also asked if they thought APNIC understood their issues and if they could assist in addressing them.

There were fifteen different issues or challenges for respondents to rank. It should be noted that several of these were around similar topics, for example four specific statements about security were included, along with six separate statements regarding deployment of IPv6.

The 2016 APNIC Survey found that the three highest ranked challenges for respondents were all related to security.

While the 2016 focus groups cited shortage of IPv4 addresses and slow uptake of IPv6 as the major challenges, security concerns were also common across all the topics discussed in the groups, in which participants felt that security threats had increased from the 2014 APNIC survey process.

In summary, the survey found that:

- Network security (intrusion and other breaches) were ranked among the top three challenges by 41% of respondents
- A further 33% ranked DDoS attacks among the top three challenges
- Phishing, spam, ransomware and malware was selected by 25% of respondents in the top three challenges
- Obtaining more IPv4 addresses was the number one ranked challenge for 10% of respondents, with 22% ranking it in the top three issues
- Challenges related to IPv6 deployment followed, although responses were spread across the six options available for selection

While the clear challenges are with network security and DDoS attacks, overall issues with IPv6 in areas such as awareness within decision maker groups, customer deployment and unwillingness to use IPv6 were also challenging for respondents. This was particularly apparent in the free text comments from respondents where IPv6 was mentioned frequently. Respondents mentioned a "need to get awareness about IPV6 uses, benefits, trainings & deployment case studies". It was also reflected in the focus groups, where many participants had IPv6 deployed in their core network, but had few customers and were unable to convince others to change.

Sixty-one percent (61%) of respondents believe that the APNIC EC and Secretariat understand the challenges facing respondents in providing Internet related services. This compares favourably to industry benchmarks for Member-based organisations. The most recent Associations Matter Study found that the average score across Member-based organisations for this question was 53%.

Eighty percent (80%) of respondents agreed that APNIC has a role to play with getting more IPv4 addresses. Just over 50% of respondents indicated that APNIC could help them with their security related challenges.

More training, particularly in network security and IPv6, and greater collaboration and knowledge sharing among the community were mentioned most frequently in free text comments about how APNIC could assist with the challenges facing respondents.

61 % of respondents agree that the APNIC EC and Secretariat understand their challenges

Challenges

Respondents were asked to identify the challenges facing their organisation, and to rank at least three, in order of priority, from a list of fifteen items. Network security was included in the top three challenges facing their organisation by 41% of respondents.

Other security related issues followed, with 33% of respondents rating DDoS attacks as one of their top three challenges, and 25% including phishing, spam, malware and ransomware within the top three issues facing their organisation.

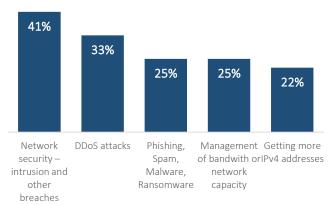
Management of bandwidth and network capacity was included in the top three challenges by 25% of respondents.

These results support the findings from the 2016 focus groups, where security issues, IPv4 availability and slowing uptake of IPv6 were the primary concerns.

Security is the biggest challenge facing respondents

% of respondents who ranked statement within the top three challenges

(Presented to APNIC Members only)



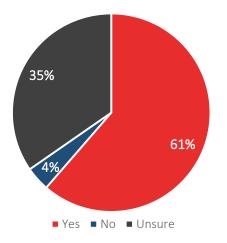
Aggregated % by Issue	Rank1	Rank2	Rank3
Security Issues	41%	41%	36%
IPv6 Related Issues	30%	34%	33%
IPv4 Related Issues	13%	12%	10%
Other Issues	15%	13%	19%
Total	99%	100%	98%

Q 16 – Industry challenges	Rank1	Rank2	Rank3	Rank4	Rank5	Rank6	Rank7	Rank8
Network security – intrusion and other breaches	16%	13%	12%	8%	9%	6%	7%	4%
DDoS attacks	13%	11%	9%	8%	10%	6%	6%	12%
Getting more IPv4 addresses	10%	6%	6%	7%	6%	4%	7%	10%
Management of bandwidth or network capacity	8%	6%	11%	10%	13%	12%	9%	4%
Phishing, Spam, Malware, Ransomware	7%	11%	7%	8%	8%	6%	10%	8%
Hiring and/or keeping skilled employees	7%	7%	8%	10%	7%	7%	7%	3%
Customer unwillingness to use IPv6	7%	6%	8%	6%	4%	12%	5%	8%
Lack of awareness of IPv6 in my organization	6%	7%	4%	7%	5%	3%	5%	9%
Deploying IPv6 in customer networks	5%	5%	6%	3%	9%	4%	10%	9%
Cost of deploying IPv6	5%	6%	5%	5%	4%	7%	10%	2%
Routing security	5%	6%	8%	10%	6%	10%	6%	5%
Lack of IPv6 applications	4%	6%	6%	8%	6%	5%	4%	9%
Risks of deploying IPv6	3%	4%	4%	2%	3%	7%	9%	7%%
Deploying NAT	2%	4%	3%	5%	4%	7%	0%	2%
Brokers selling/leasing IPv4 addresses	1%	2%	1%	3%	3%	2%	6%	9%

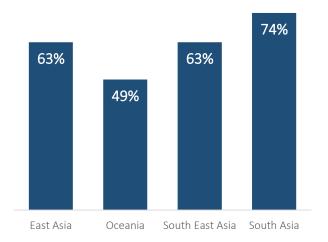
Does APNIC understand Member challenges?

Q 19 - Do you think the APNIC EC and Secretariat understand the challenges faced in providing your internet related services, products or activities.

n = 805 (Presented to APNIC Members only)



Respondents who agree that APNIC understands the challenges their organisation faces



Respondents from South Asia are most likely to agree that APNIC understands the challenges facing their organisation

While 61% of respondents think that the APNIC EC and Secretariat understand their challenges there are significant differences in the opinions of respondents in different economy types.

Seventy-eight percent (78%) of respondents in LDEs agreed that APNIC understands their challenges, compared to 65% of respondents in developing economies and 49% of respondents in developed economies.

Sub-regional differences also exist in the responses to this question. Seventy-four percent (74%) of respondents from South Asia agree that the APNIC EC and Secretariat understand the challenges faced in providing Internet related services, products and activities, significantly higher than the level of agreement from other sub-regions.

It is noted however, that the survey respondents were not asked if they expected or required APNIC to understand all of their challenges. Therefore, negative responses to this question can not necessarily be regarded as a complaint.

Can APNIC assist with respondents' challenges?

Respondents in developed economies are significantly less likely to believe APNIC can help them with their challenges.

Lack of IPv4 Addresses

Getting more IPv4 addresses was the challenge in which the majority of respondents (80%) thought APNIC could play a role. Agreement varies across economies and subregion, with respondents in developed economies and Oceania less likely to agree that APNIC can assist.

Many participants in focus groups suggested APNIC could assist by taking a role in IPv4 address recovery and reclamation efforts, price setting, setting up new allocation policy guidelines and pursuing illegal activity.

While 65% of respondents agreed that APNIC has a role to play where brokers were selling or leasing IPv4 addresses, this was not ranked highly among their challenges. Only 4% of respondents included this in the top three challenges they face.

Q 17 - Do you believe APNIC has a role to play in helping address these challenges?

n = 851 (Presented to APNIC Members only)

	% Agree APNIC can assist
Getting more IPv4 addresses	80%
Routing security	67%
Brokers selling/leasing IPv4 addresses	65%
Risks of deploying IPv6	65%
Lack of awareness of IPv6 in my organization	63%
Customer unwillingness to use IPv6	61%
Network security – intrusion and other breaches	54%
Deploying IPv6 in customer networks	54%
DDoS attacks	53%
Cost of deploying IPv6	52%
Lack of IPv6 applications	50%
Phishing, Spam, Malware, Ransomware	50%
Management of bandwidth and network capacity	34%
Deploying NAT	33%
Hiring and/or keeping skilled employees	33%

Security

The highest ranking challenge, network security, was an area that 54% of respondents believe APNIC has a role to play in helping address. Fifty-three percent 53% also agree that APNIC can assist with the second highest ranked challenge – that of DDoS attacks.

Respondents in developed economies are significantly less likely to agree that APNIC can assist with network security (35%) and DDoS attacks (39%). In comparison, 70% of respondents in LDEs and 64% in developing economies agree that APNIC has a role to play in network security. Sixty-seven percent (67%) of respondents in LDEs and 60% in developing economies agree that APNIC can assist with DDoS attacks.

Fifty percent (50%) of all respondents agree that APNIC can assist with phishing, spam, malware and ransomware, the third highest ranking challenge that respondents face. Again, respondents in developed economies were significantly less likely to agree that APNIC had a role to play, with only 32% agreeing APNIC could help address the challenge.

Sixty-seven percent (67%) of respondents agreed that APNIC could assist with routing security, a challenge included in the top three by 19% of respondents.

In both focus groups and the free text comments provided in the survey, training was the main way in which respondents felt that APNIC could assist with security related challenges. Facilitating collaboration and knowledge sharing was also a strong theme.

IPv6 Deployment

A majority of respondents agree that APNIC can assist with lack of IPv6 awareness within their own organisations (63%) and with customer unwillingness to use IPv6 (61%). While these were not respondents' main challenges (17% and 21% of respondents respectively ranked these within the top three challenges they faced), it was repeatedly raised in both free text feedback and focus groups.

40

Respondents were asked in their own words how they think APNIC can assist them with their challenges.

Requests for more advanced training was the main theme

"APNIC can conduct more sub-regional trainings as we have only very few of those in our sub-region." Oceania

"APNIC can help us to training the staff for deploying the IPv6" South East Asia

"Providing advanced IPV6 trainings..." South Asia

"To arrange more advance training in the above mentioned areas specifically network security" South Asia

Facilitation of knowledge sharing amongst respondents, and development of case studies was also important.

"With providing case to case support over time and more engagement with the community." South Asia

"Provide info (contacts or success stories, etc) on early adopters of IPV6 with similar setup with ours." South East Asia

"More interaction possibly some localized support centres where we can held meeting and interact with APNIC authorities and discuss the faced challenges." South Asia

General education and promotion of the benefits of IPv6 was mentioned by several respondents.

"By being more proactive in reaching management layers of an organisation." Oceania

"Currently we have no business demand for IPV6 however APNIC could offer more education, awareness and potentially assistance around IPV6" Oceania

"...help Member nations ... in training and exposure to organization that have moved to IPv6 and their story." Oceania

Ideas for APNIC to assist with security were also prevalent.

"APNIC could take a lead role globally in working with network providers and routing equipment manufactures to reduce security risks associated with IP Address spoofing and DDoS/routing level network security globally." Oceania

"For Security Part. Maybe APNIC should work out a way to block all known Bad Domain or Malicious Domain in Tier 1 or Tier2 Level so we can benefit from it as Tier 3 ISP services" Oceania

"APNIC can assist by helping to combat known addresses/ranges that attacks are being started from" Oceania "I think that having a central body to advocate and co-ordinate security initiatives and promotion of IPv6 would be valuable."

Are organisations ready for IPv6?

Full deployment of IPv6 is mixed across the APNIC sub-regions, but remains relatively low in the context of diminishing availability of IPv4

addresses.

Participants in the focus groups indicated that deployment or transition to IPv6 appears to have slowed across the region.

As this was identified as a key challenge in the focus groups, a section on IPv6 was included in the online survey. Please note, however, that while APNIC Labs measures end-user IPv6 readiness through paid advertising, website placement and in-browser testing, this Labs data is not linked to the APNIC Survey. Only the stated views and intentions of respondents to the APNIC Survey are reported here.

The full results are presented in the following pages, with the key findings outlined below:

- Fifteen percent (15%) of respondents have IPv6 fully deployed, with 21% indicating that it is deployed in their core network.
- Twenty-nine percent (29%) of respondents have a deployment plan and of those 32% expect IPv6 to have full deployment in 2017.
- Lack of demand from customers and customers not being ready were the challenges most often included in the top three reasons affecting deployment.
- Providing case studies and best practice, more advanced IPv6 training and promotion of the benefits to customers and management/decision makers were viewed as the most effective ways in which APNIC could assist respondents transition to IPv6.

Respondents in LDEs and developing economies are more likely to either have fully deployed, deployed in their core network or have a deployment plan to transition to IPv6. Seventy-three percent (73%) of respondents in LDEs and 72% in developing economies have either deployed or plan to deploy, compared to 52% in developed economies.

Whether this is indicative of organisations in developed economies having access to more IPv4 addresses, the ability to use technology (such as carrier grade NAT) to assist with the lack of addresses, or some other reason is unclear. However, free text comments from respondents in Oceania indicated that ISPs were either not interested in IPv6, they had "enough" IPv4 addresses, or there were no upstream providers who were IPv6 ready.

This was also apparent when asked about the main challenges affecting deployment of IPv6 – in Oceania respondents were far more likely to indicate there were no clear business or technical advantages to transition, and that legacy systems were affecting a move to IPv6 than respondents in other sub-regions.

The most effective ways most respondents think that APNIC can assist separate into two main approaches – advanced training and knowledge sharing, and promotion of the benefits to business, customers, ISPs, Telcos and other hardware vendors.

Free text comments found that advanced training, preferably with some face to face courses in the local economy or sub-region, was most often identified as the best way for APNIC to assist. This was closely followed by the idea of sharing case studies of those who had (successfully or otherwise) deployed IPv6, and facilitating knowledge sharing across and between respondents.

Promotion of the benefits of IPv6, both in general and to specific segments of the community was also frequently cited in the free text comments. Around 40% of the comments provided mentioned general promotion and / or promotion to Governments and authorities, businesses and customers.

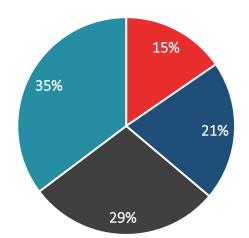
IPv6 Deployment – Are respondents ready?



of respondents have IPv6 fully deployed.

Q 11 - IPv6 deployment amongst respondents

(n = 805) (Only presented to APNIC Members)



Yes, IPv6 is fully deployed

Yes, IPv6 is deployed in our core network

- Have a deployment plan
- No

Overall, 15% of respondents have IPv6 fully deployed, which confirms feedback in the 2016 focus groups that the transition to IPv6 had slowed with some respondents indicating there were no plans to deploy IPv6 and that they may co-exist with IPv4 and NAT for many years to come.

Respondents in East Asia and South East Asia (24%) were significantly more likely to indicate full IPv6 deployment than other sub-regions. In contrast, Oceania is the sub-region least likely to have either fully deployed IPv6 (7%) or deployed it in their core networks (17%).

Further, Oceania is significantly more likely than other sub-regions to have no plan for deployment (53%). Without further investigation the reasons are unknown, however the initial distribution of IPv4 may mean that large ISPs in this region acquired enough addresses for their foreseeable future. The free text comments from respondents in Oceania indicated that the largest ISP's were "not interested" in IPv6, that their retail and domestic routers do not support it and that they "have plenty of IPv4 left".

Twenty-six percent (26%) of LDEs have fully deployed or have IPv6 in their core networks, compared to 31% of developed and 44% of developing economies. However, 47% of LDEs have a deployment plan, while only 21% of developed and 28% of developing economies indicate that they have a deployment plan in place.

Q11	LDEs	Developed Economies	Developing Economies	East Asia	Oceania	South East Asia	South Asia
	136	279	390	134	251	160	221
Yes, IPv6 is fully deployed	8%	14%	19%	24%	7%	24%	10%
Yes, IPv6 is deployed in our core network	18%	17%	25%	28%	17%	20%	21%
Have a deployment plan	47%	21%	28%	18%	24%	33%	41%
No	27%	48%	29%	31%	53%	24%	29%

Of those respondents who have a deployment plan, 32% expect it to be completed in 2017.

Eleven percent (11%) of respondents expect to complete deployment during this year, and a further 20% indicate that their deployment of IPv6 will be completed in 2018.

Expected deployment of IPv6 in 2017 was highest in LDEs (41%) and South East Asia (42%).

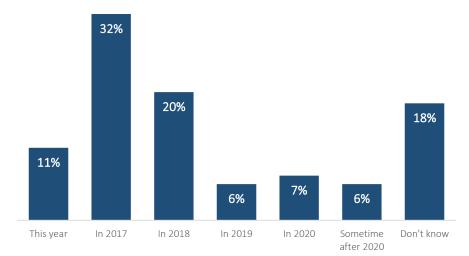
Eighteen percent (18%) of respondents did not know when IPv6 deployment would be completed, even though they indicated that they had a deployment plan in place.

This was slightly higher in East Asia and Oceania (25% and 27% respectively) where respondents indicated they had a plan, but did not know when they expected to deploy IPv6.

This again reflects focus group feedback in which many participants indicated that they were a long way off their planning targets and that the rate of IPv6 deployment had slowed.

Q 12 - Expected IPv6 deployment / readiness

(Only asked of those respondents who indicated they "Had an IPv6 deployment plan". n=230)



Developed South East Developing South LDEs East Asia Oceania Deployment completed Economies **Economies** Asia Asia 58 108 24 59 52 64 90 This year 6% 16% 12% 4% 19% 12% 9% In 2017 41% 26% 31% 21% 24% 42% 36% In 2018 13% 16% 27% 25% 19% 23% 19% In 2019 6% 5% 6% 8% 2% 6% 6% In 2020 11% 5% 6% 8% 7% 0% 11% Sometime after 2020 9% 3% 5% 8% 3% 4% 8% Don't know 14% 29% 15% 25% 27% 13% 12%

The next question asked about the main challenges affecting the ability to deploy IPv6. Respondents were able to select up to three challenges from a list supplied.

Forty-six percent (46%) of respondents selected a lack of demand for IPv6 from customers amongst their top three challenges. This was followed by customers not being ready for IPv6 (36%). Focus group feedback supports this, with participants indicating that where IPv6 was deployed in their core network they had few or no customers. Over 40% of respondents from all sub-regions included lack of demand for IPv6 from customers among their top three challenges.

Lack of skills within the organization and no clear business or technical reasons to adopt IPv6 were two other challenges respondents thought were affecting their ability to deploy IPv6, these factors being selected by 28% and 27% of respondents respectively.

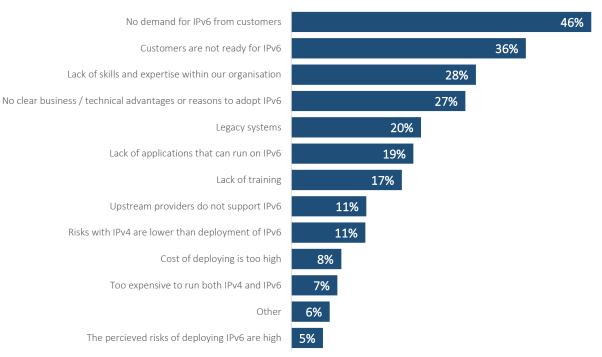
Issues mentioned in focus groups such as the lack of backward compatibility for both hardware and software and lack of IPv6 applications were also amongst the top three challenges selected by 19% of respondents. In Oceania, 36% of respondents included a lack of clear business or technical advantages and 32% that legacy systems were in the top three challenges affecting their ability to deploy IPv6. Again, comments from respondents in Oceania suggested that the largest ISP's were "not interested" in IPv6. Focus group discussions also mentioned that many had "accepted carrier grade NATs".

Respondents from LDEs were more likely to cite lack of skills within their organisation (36%) and lack of training (34%) than respondents from developed (28% and 6% respectively) or developing economies (26% and 19% respectively).

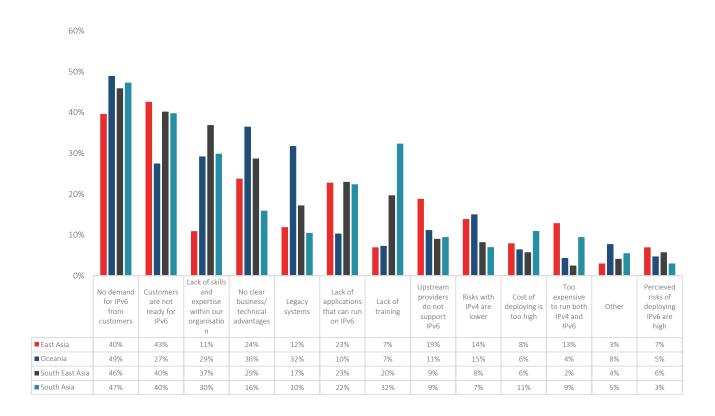
> "We are IPv6 ready but we have zero customers"

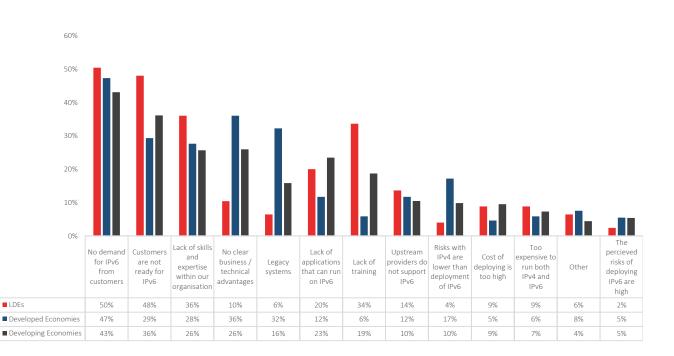
Q 13 - Main challenges affecting deployment of IPv6

% Respondents Selected (Base n = 680, n = 1634) (Presented to APNIC Members only)



Main challenges affecting IPv6 deployment





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How can APNIC assist with IPv6 deployment?

Training & Knowledge Sharing

Providing case studies and examples of best practice, advanced training in IPv6 and knowledge sharing among respondents were frequently mentioned as ways APNIC can assist the transition to IPv6 in the 2016 focus groups.

This is supported in the survey results, with these activities rating highly among respondents' selections of the most effective ways APNIC could assist the transition to IPv6.

Respondents from South (61%) and South East Asia (54%) were most likely to indicate that providing more advanced training in IPv6 is one of the most effective ways APNIC could assist the transition to IPv6. Many free text comments also indicated that "advanced training of IPv6 and use case" and "in depth training for deployment of IPv6" would be beneficial.

Facilitation of knowledge sharing among and between respondents was also seen as effective, with 31% of respondents including this in their top two selections. Respondents from South East Asia (38%) were more likely to believe this would be an effective way in which APNIC could assist with deployment of IPv6.

Promotion of the Advantages

Promotion of the benefits of deploying IPv6 was a common topic of discussion in the 2016 focus groups, where many participants expressed concern that deployment across the region had slowed.

There was also support for APNIC taking a role in promoting the benefits of IPv6 to both customers and management or decision makers amongst survey respondents, with 38% and 39% respectively including these options in the most effective ways APNIC can assist respondents.

Free text feedback supported this, with comments indicating that APNIC will need to "deliver a clear message on it's advantages", and some comments particularly suggesting presentations and seminars "with management level participants."

Only 4% of respondents think that APNIC should take no action to assist with IPv6 deployment, a strong indication that respondents think APNIC has a significant role to play in this area, although this rises to 7% from developed economies.

Reflecting the outcomes from the focus groups, respondents thought that providing case studies, best practice examples and more advanced training were the most effective ways that APNIC could assist the transition or deployment of IPv6.

Q 14 - Most effective ways APNIC can assist organisations transition to or deploy IPv6

% Respondents Selected, (Base n = 676, n = 1701) (Presented to APNIC Members only)

	Total	East Asia	Oceania	South East Asia	South Asia
Sample Size	676	99	233	122	200
Total Mentions	1701	223	568	328	531
Provide case studies and best current practices about IPv6	49%	46%	46%	59%	48%
Provide more advanced training in IPv6	46%	38%	35%	54%	61%
Promote the benefits of IPv6 to management and/or decision makers	39%	34%	42%	41%	35%
Promote the benefits of IPv6 to customers/consumers	38%	31%	36%	39%	40%
Facilitate knowledge sharing between member organisations on IPv6 deployment experiences	31%	24%	30%	38%	33%
Promote the advantages of IPv6 to hardware, software and/or content providers	24%	20%	25%	20%	29%
Promote the advantages of IPv6 to government and related organisations	20%	23%	21%	16%	21%
APNIC should take no action to promote or assist with the deployment of IPv6	4%	7%	6%	1%	1%

Respondents were also asked to say in their own words how they think APNIC can assist them to transition or deploy IPv6.

There were many suggestions, predominantly for training

"Held more training course for IPv6's deployment." South East Asia

"Giving more learning tools and training materials." South Asia

"Constantly training of ipv6 deployment, more training meeting and technology exchange meeting, provides more ipv6 training ppt, information materials and newest ipv6 technology applications." East Asia

Many respondents suggested that APNIC provide case studies and facilitate knowledge sharing in the sub-region

"APNIC is doing an outstanding job promoting of deployment of IPv6. I suggest more of effective case studies should be discussed on events with more audience from government regulatory and key decision makers." South Asia

"APNIC should take a leading role in the sub-region to facilitate and assist all respondents to migrate to IPv6 ASAP by providing specialised professional services and facilitate meetings between those deployed and those still planning." Oceania

Many respondents suggested APNIC assist with promotion of the benefits of IPv6 to customers and decision makers

"APNIC to encourage members (ISP's) to start deploying IPv6 to its customers." Oceania

"...2nd, I suggest APNIC to do a presentation on advantages on IPv6 to my management and decision maker." South East Asia

"IPv4 provides for all our requirements, we have no real reason to change so APNIC will need to deliver a clear message on it's advantages for us to put in the effort." Oceania

"More seminars in sub-regions with management level participants." South Asia

There was also mention that there was nothing that APNIC could do:

"My own feeling on all of this is that IPv6 will only see wide adoption when IPv4 is truly exhausted. IPv6's use of hex numbers make it unwieldy and unapproachable for most of the general public. Apologies about my pessimism however I think the human friendliness of IPv6 has been greatly under considered and this should serve as a lesson to the development of future standards (eg. IPv7)." Oceania

"I believe APNIC should be one to lead and drive this transition for the region."

Training

Training demand is strong... but many respondents want local, more advanced technical services.

One of the objectives of APNIC is to provide training and educational opportunities that helps improve respondents' technical knowledge, skills and understanding of policies.

Focus group sessions found that demand for training services was strong and feedback in the online survey confirmed this. Eighty-three percent (83%) of respondents agree that training is an important APNIC function. Yet only 20% of respondents indicated that they had attended an APNIC training course over the last twelve months.

While only used by 22% of all respondents over the last two years, most respondents believe that training is an important function of APNIC.

Analysis of the feedback provided by respondents in their own words indicates that low use is most likely a function of location and cost. When asked about the services that could be delivered locally, respondents overwhelmingly mentioned training. Training cost was also mentioned as a barrier to attendance. To understand satisfaction with current training services, respondents who had used APNIC training were asked to rate the quality of the training provided. Ninety percent (90%) of respondents provided a positive rating of five or higher that APNIC training is relevant and useful, with 86% agreeing in some form that sessions were provided in a suitable format.

There were suggestions for improvement provided both in focus groups and in the free text comments provided by respondents. These included more face-to-face training, accredited training courses, delivery in local language and training conducted incountry or sub-region. Calls for more technical training were common. Many comments indicated that training should be more advanced and detailed, and that case studies would be beneficial.

Eighty percent (80%) of respondents provided a positive rating that APNIC training represents value for money, however, focus groups and respondent comments provided indicate that lower training fees are important in some economies. There was strong support for the idea of providing subsidies for training where necessary, particularly in LDEs where 92% agreed APNIC should subsidise training. A majority of respondents (72%) support the concept of seeking additional, external funding sources to help build its technical training.

Training topics that address the major challenges identified by respondents, those of security and IPv6 implementation, were most frequently mentioned as providing value. This confirms focus group discussions where respondents requested training in topics such as Quality of Service (QoS), prevention of Distributed Denial of Service attacks (DDoS) and more advanced courses in IPv6 and routing. It also confirms the findings in the recent APNIC Training Survey where network security and IPv6 were the most important training topics respondents thought APNIC could offer.

Demand for local language training and support is strong, and more advanced technical training on network security and IPv6 implementation planning are the topics that would provide Member organisations with most benefit.

The importance of training

In this part of the survey, respondents were asked to indicate if they agreed that training is an important function of APNIC, whether training should be responsive to Member needs and whether subsidies should be offered to increase affordability. Responses were provided on a seven point scale, from Strongly disagree to Strongly agree.

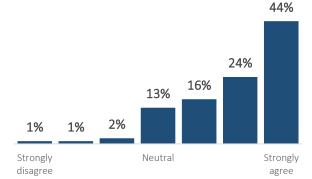
Eighty-three percent (83%) of respondents indicated that the provision of training services is an important APNIC function. Training services are considered significantly more important by respondents in LDEs (93%) and South Asia (92%). This may reflect a lack of local alternatives and the greater reliance of these respondents on the services offered by APNIC.

Respondents from developed economies and East Asia were less likely to agree that training was an important APNIC function.

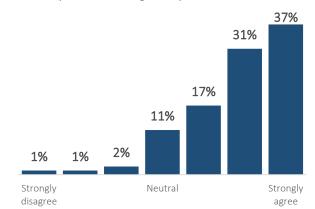
A majority of respondents (85%) also agreed that APNIC training should be responsive to Member requests and needs. Respondents in South East Asia were significantly more likely to support this than respondents in East Asia and Oceania.

Eighty percent (80%) of respondents also agreed that APNIC should subsidise training to increase affordability where necessary. There were significant differences in agreement between respondents from different economy types. Developed economies were much less likely to support subsidised training (69%), compared to 93% in LDEs and 82% in developing economies.

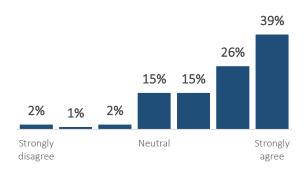
"To a developed country the fees do not look big but it is often approaching a monthly salary here ..."



Q 31 - The provision of training is an important function of APNIC



Q 31 - Training offered should be responsive to Member needs



Q31 - APNIC should subsidise training where necessary

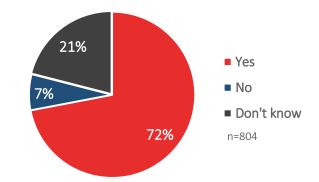
Note: Figures may not sum to 100 due to rounding

Q31	Total	LDEs	Developed	Developing	East Asia	Oceania	South East Asia	South Asia
	797	134	277	386	131	249	159	219
The provision of training is an important function of APNIC	5.87	6.43	5.48	5.96	5.44	5.58	6.03	6.38
Standard deviation	1.32	0.98	1.35	1.31	1.52	1.35	1.10	1.10
Training offered by APNIC should be responsive to Member requests and needs	5.85	6.31	5.56	5.91	5.34	5.62	6.13	6.20
Standard deviation	1.21	1.00	1.24	1.20	1.36	1.24	0.97	1.10
APNIC should subsidise training to increase affordability where necessary	5.73	6.40	5.18	5.91	5.38	5.33	6.04	6.28
Standard deviation	1.39	0.97	1.43	1.34	1.50	1.44	1.10	1.16

External resources for training and participation

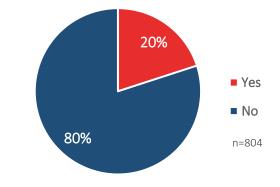
A majority of respondents (72%) believe that APNIC should seek additional external resources to help build its training and technical assistance services. Again, broadening the funding base was more strongly supported by respondents in LDE's and developing economies (85% and 75% respectively).

Respondents from South and South East Asia were also more likely to support the idea of seeking additional external resource to help build training and technical assistance (81% and 80% respectively) than those from East Asia (68%) and Oceania (64%).



Q 32 - To reduce reliance on Member funds, should APNIC seek additional external resources to help build its training and technical assistance?

A total of one hundred and fifty seven (157) respondents indicated that they had undertaken APNIC training over the last twelve months, or 20% of respondents. Participation was highest amongst respondents in LDEs with 32% indicating they had attended a training course in the past twelve months, while only 8% of respondents from developed economies had taken part in APNIC training.



Q 33 - Have you undertaken training in the last twelve months?



of respondents agree APNIC should seek additional external resources to build training and technical assistance services

Training assessment

Those respondents who had taken part in APNIC training were asked to rate the quality of the training provided. Responses were provided on a seven point scale, from Strongly disagree to Strongly agree.

Of respondents who had used APNIC training services, 90% rated the training programs as relevant and useful. Respondents in South Asia and Oceania were significantly more likely than their East Asian counterparts to find APNIC training relevant and useful.

Eighty-six percent (86%) of respondents agreed the training programs were provided in a suitable format.

When asked about value, 81% of respondents provided a rating of five or higher that APNIC training programs represent value for money. Respondents in Oceania were most likely to agree that training programs provide value for money, particularly when compared to respondents from East Asia. It is also worth noting that respondents ratings of value have improved since 2014, with the mean score for value for money increasing from 5.20 in 2014 to 5.82 in 2016.

The lowest level of satisfaction was with the number of training programs offered, with fewer respondents agreeing that APNIC offers a sufficient number of training programs.

> "APNIC can conduct more sub-regional trainings as we have only very few of those in our sub-region."

6.10 5.92 5.82 5.69

Relevant and Training Training A sufficient useful training programs in a programs that number of programs suitable format represent value training for money programs

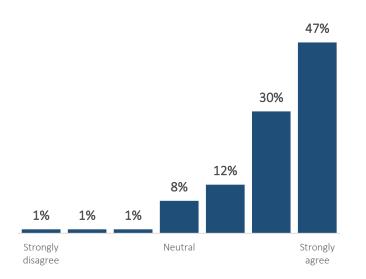
	LDEs	Developed	Developing	East Asia	Oceania	South East Asia	South Asia
* Please note small sample sizes	43	21	92	33	27	43	51
Relevant and useful training programs	6.37	6.10	5.97	5.39	6.26	6.16	6.37
Training programs in a suitable format	6.30	5.71	5.79	5.28	5.96	6.14	6.12
Training programs that represent value for money	6.07	6.05	5.65	5.39	6.15	5.79	5.94
A sufficient number of training programs	6.07	5.52	5.55	5.34	5.70	5.65	5.90

Q 34 - Respondents ratings of APNIC Training Services Mean Score, (n = 157)

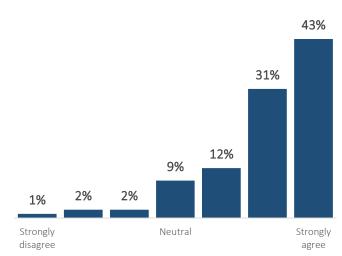
Training assessment

Relevant and useful training programs

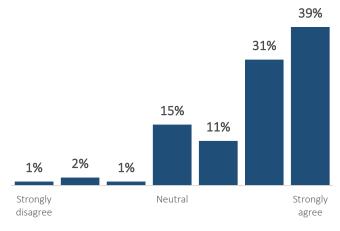
N=157



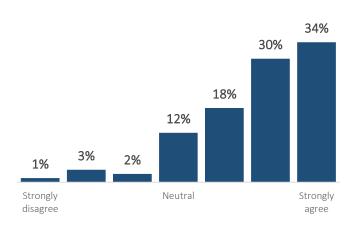
Training programs in a suitable format N=157



Training programs that represent value for money $\ensuremath{\mathsf{N}}\xspace{=}157$



A sufficient number of training programs N=157



Training topics

The last question in this part of the survey asked about the training topics that would be of most value to Member organisations. Respondents were able to choose all of the topics that would assist their organisation.

The most commonly selected topic for potential APNIC training was network security. Seventy percent (70%) of respondents indicated that APNIC training focused on network security would assist their organisation.

Q 35 - Training Topics of most interest to respondents

% Respondents Selected (base n = 799, n = 4382) (Presented to APNIC Members only)

Training Topics	Respondents
Sample Size	799
Network security	70%
IPv6 deployment planning	55%
Routing protocols (BGP, OSPF/IS-IS etc.)	45%
Optimizing network architecture	43%
DNS and DNSSEC	41%
Software Defined Networking (SDN)	41%
Virtualization of network functions and/or services	36%
MPLS	34%
Best practices for inter-domain routing	33%
QoS	32%
Incident handling and response	23%
RPSL and Routing Registry	22%
IXP design, operation and management	20%
CERT/CSIRT operation and management	18%
Training of trainers in any of the topics listed here	16%
RPKI	15%
None of these – my organization does not require training or technical support from APNIC	4%
Other (please specify)	1%

This confirms the earlier feedback; when asked how APNIC could assist with challenges many comments indicated that training on "best practises in terms of security" would be helpful. Respondents in LDEs were particularly interested in network security training, with 85% indicating it would be of benefit.

More than half (55%) of respondents also indicated that training focused on IPv6 deployment planning would help their organisation, and this was supported by suggestions provided in free text comments. Respondents suggested that "APNIC should have advanced training of IPV6" and that they "need some good training on IPv6 and best practices while deploying IPv6". There were also comments that "presenting test cases" would help. The recent APNIC Training Survey also found IPv6 training to be the second most important training topic.

Respondents in LDEs (65%) and South Asia (69%) were the most interested in training on IPv6 deployment planning. Respondents from East Asia were significantly less likely than respondents from other sub-regions to indicate that training in IPv6 deployment planning would assist their organisation.

"APNIC should provide us more training for network security and IPv6 deployment." "Focus on local (technical and non-technical) training, Internet awareness and IPv6 adoption"

Policy Development

Policy Development Process

This part of the survey looked at respondents' opinions and experiences of the APNIC Policy Development Process for Internet Number Resources.

A significant amount of feedback was provided by respondents, with the majority providing reasons why they did not participate in the Process. A total of forty eight (48) respondents indicated that they had participated in the APNIC Policy Development Process over the last two years. The remaining 1,121 were asked why they had not taken part, using a quantitative question and by providing feedback in their own words.

Thirty six percent (36%) of respondents indicated that they did not participate because they "trust the community to develop the right policies". In the words of one respondent "I believe there are experts who are taking good care of it." Another suggested they were "not confident enough about my technical knowledge to provide proper input." Forty-five percent (45%) of respondents indicated that they "don't know enough about the process", 32% were unaware they could participate and 22% suggested they did not take part because they hadn't been asked.

Respondents were asked in their own words what APNIC could do to encourage participation. Many respondents' suggested that APNIC should "share information about the process" and "send specific communication on the subject with details of the process" to raise awareness and encourage more people to take part. One respondent simply said that APNIC should "just invite me".

Other respondents suggested that making "the process available for online participation" may encourage greater involvement, while others indicated that language barriers and lack of knowledge stopped them from participating.

Only 2% of respondents indicated they were not interested in participating, supporting the feedback throughout the survey about collaboration and facilitation of information sharing.

"Provide more information on what is involved and how to participate."

Q 37 - Reasons for Non-Participation in APNIC Policy Development Process for Internet Number Resource Policies

% Respondents Selected (base n = 1121, n = 1889)

	Total	Member	Stakeholder	East Asia	Oceania	South East Asia	South Asia
Sample Size	1,121	773	348	251	217	244	304
I don't know enough about the process	45%	45%	44%	37%	48%	50%	49%
I trust the community to develop the right policies	36%	35%	39%	41%	27%	37%	39%
I wasn't aware I could participate	32%	34%	26%	19%	37%	26%	44%
No one has asked me to participate	22%	22%	23%	17%	26%	23%	23%
I don't have time to participate	18%	21%	11%	23%	26%	16%	5%
It's too difficult to participate in the process	10%	11%	8%	17%	6%	9%	10%
Other	3%	3%	4%	2%	3%	5%	3%
I'm not interested in participating	2%	2%	2%	4%	3%	2%	0%

62

Unlike the 2014 Survey, only those respondents who indicated that they had participated in the APNIC Policy Development Process were asked to provide their experience of the process. Ratings were provided on a seven point scale, from Poor to Excellent.

While the number of respondents participating in the Process was very low, those who did provided more positive feedback about all aspects of their involvement than in 2014.*

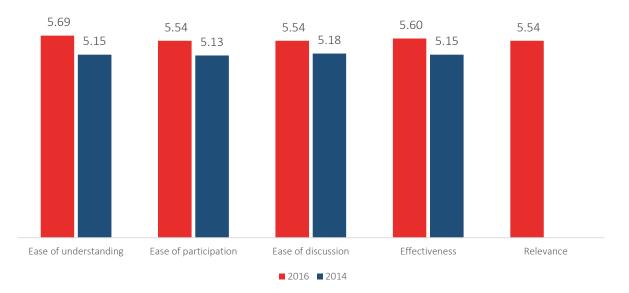
Respondents rated the 'ease of understanding' of the discussions more positively than other aspects, with 81% of respondents providing a rating higher than neutral.

Relevance of the APNIC Policy Development Process to their organisation (77%) was least likely to be rated as a 5, 6 or 7 out of seven.

Because of the low number of responses all of the feedback from respondents about taking part in the Policy Development Process should be seen as suggestive only. While the number of respondents who participated in the Policy Development Process was very low, those who did provided more positive feedback about their involvement than in 2014.

Q 39 - Respondents Ratings of the APNIC Policy Development Process for Internet Number Resource Policies

Mean Score (n = 48) (Presented to respondents who indicated they had participated in the process)



*n = 48 Please note the small size of the sample which can result in greater variability in mean score results..

"Make the Member aware of the scope and importance of policy development and how much time and effort will it entail." Respondents were also asked what they thought APNIC could do to encourage greater participation in the APNIC Policy Development Process for Internet Number Resource policies.

Respondents indicated that awareness campaigns that informed respondents about the process were necessary.

"APNIC can organize online session for creating awareness on Policy Deployment Process." South Asia

"APNIC must announce about the event so many people can participate" Oceania

"APNIC should socialize the importance of the Policy Development Process to all Stakeholder." South East Asia

"Awareness building among local communities for participating in the policy development process." South Asia

"Broadcast or spread this type of news/events not only in website, but also in Social media like Facebook, LinkedIn etc." South Asia

"Provide more information on what is involved and how to participate." Oceania

Other respondents suggested APNIC should invite participation.

"APNIC could invite me then I could join. ." South Asia

"Nothing just invite me and I will participate ?" South Asia

"I would like to be actively involved in the region in APNIC's activities, can you please have me onboard?" South Asia

"Just invite me " South East Asia

Several comments from respondents indicated they did not know anything about the Policy Development Process

"I do not have much knowledge on Policy Development Process " South Asia

"I don't know clearly about this process. Please give me some materials or guideline about this process." South East Asia

Resource Allocation, External Relations & New Services

APNIC resource allocation

To understand respondents' priorities for APNIC service delivery, they were asked to provide their opinions about budget allocation to each of three broad strategic activities.

With 20% of the budget allocated to Corporate Operations, respondents were asked to provide their opinion on the distribution of the remaining 80%, across three categories: Serving Members, Regional development and outreach and Global cooperation.

On average, respondents indicated that 33% of the budget should be allocated to serving Members, 27% to Regional development and outreach activities and 20% to Global cooperation.

Standard deviations should be noted as they provide an indication of the variability of respondents answers to this question.

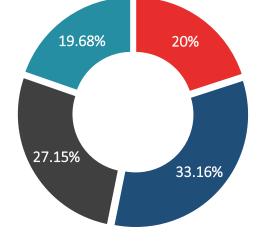
While preferences across sub-regions and development status' are mostly the same, there appears to be a preference among respondents in LDEs to allocate a larger percentage, on average, of the APNIC budget to Regional development and outreach activities and less to serving Members.

Respondents in developing economies are likely to indicate, on average, that a slightly larger percentage of the budget should go towards Regional development and outreach activities.

Respondents in developed economies, East Asia and Oceania were more likely to allocate a larger percentage of budget funds to serving Members

Q 21 - Percentage of the total budget respondents think should be allocated to strategic activities.

(n = 806) (Presented to APNIC Members only)



Corporate Serving Members Regional development & outreach Global cooperation

	LDEs	Developed Economies	Developing Economies	East Asia	Oceania	South East Asia	South Asia
Serving Members							
Mean	31.41	35.73	31.94	35.57	35.70	31.37	29.71
Std. Dev.	14.56	13.78	14.15	15.14	14.02	13.90	13.30
Regional development & outreach							
Mean	29.39	24.95	27.95	25.60	25.85	27.04	30.05
Std. Dev.	11.99	10.86	10.85	10.83	11.48	10.84	11.06
Global cooperation							
Mean	19.20	19.32	20.12	18.84	18.45	21.59	20.24
Std. Dev.	12.06	10.18	11.57	11.35	10.09	12.80	11.16

Member Services: Establishing a local presence

There was support for the establishment of local APNIC offices or agencies, in particular in South Asia and LDEs.

Participants in focus groups indicated that 'having a local support person would add great value'. Providing effective training, lower training costs, expanding in-country outreach and having a local 'go to' person were seen as ways in which APNIC could assist with capacity building.

To test this, respondents in economies that do not have an NIR were asked if they think it is important that APNIC establish an office or agency that could delivery some services locally in their economy. Responses were provided on a seven point scale, from Not at all important to Extremely important.

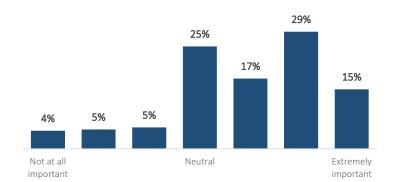
Overall, there was support for the idea of establishing local offices or agencies to deliver services. Sixty-one percent (61%) rated the idea as a 5, 6 or 7 out of seven.

Support for a local presence to service their needs was strongest amongst respondents from the LDEs. Seventy-six percent (76%) of respondents from LDEs indicated a local presence provided varying degrees of importance to them. This compares to 45% from developed economies. When asked to explain in their own words what services they believed APNIC could deliver locally, a number of respondents suggested training. While the majority of responses made general references to training provision, a number also specifically mentioned IPv6 education and security related training. Others mentioned the benefits of "suitable training time and lower cost".

Local consultancy, communication with respondents, technical support and awareness programs were also mentioned.

When asked for more general comments about local service delivery, suggestions included webinars, conferences and meetings locally or in the local time zone would be good, and that local representatives would better understand local issues.

However, some respondents felt that a local presence was not really necessary, with several mentions that it would be odd - "a provider of Internet-related services shouldn't require a physical presence".



"You just need a bridge. Having a local speaker on staff would not really help it is someone on the ground that is important. It is a different mind set and there is a different order to doing things."

Q 26 - Respondents ratings of importance of establishing local APNIC offices or agencies to deliver some services locally. (n=610)

(Not presented if Respondent from China, People's Republic of Korea, India, Indonesia, Republic of Korea, Japan, Taiwan, Vietnam)

	LDE's	Developed	Developing	East Asia	Oceania	South East Asia	South Asia
Sample	136	265	209	44	251	138	138
Mean	5.57	4.30	5.23	4.84	4.46	5.27	5.73
Standard Deviation	1.48	1.57	1.34	1.16	1.51	1.33	1.42

Respondents were also asked what services they thought APNIC could deliver locally.

Respondents suggestions included local training, networking and local knowledge sharing and collaboration sessions

"Advance training and workshop (hands-on)." South East Asia

"Training about new Internet technology" South East Asia

"More trainings for companies and lower down the cost of trainings." South East Asia

"Training classes, seminars and community sharing sessions." South East Asia

"More frequent collaboration, laboratory trainings and IT Security awareness programs." South East Asia

"Face to face training" Oceania

Many suggestions were for specific IPv6, security or technical training

"Courses and training for Network Awareness, Network Best Practices, IPv6 and Internet Landscape." South East Asia

"IPv6 education" Oceania

Local workshops, seminars, meetings and consultations were also mentioned.

"Local community event, exchange and seminars." South East Asia

"We need more APNIC regional meeting" South Asia

Collecting regional industry data

It was suggested during focus group discussions that, as an independent source of regional information, APNIC is in a position to facilitate information collection and sharing.

APNIC has received suggestions from previous surveys and focus groups that it could assist with the collection of data on trend and benchmarks for regional Internet, infrastructure and related technical and business activities.

To test wider interest in this idea the survey asked respondents if they (or their organisation) would be interested in contributing to data in order to develop trend and benchmark information.

Forty-three percent (43%) of respondents expressed an interest in being involved and contributing data to build regional trend and benchmark information. There was mention that the initiative would "bring the sharing of best practices into the forefront of APNIC Member services"

Another 37% indicated they wanted more information before deciding. Only 7% of respondents were not interested in contributing, while 13% either didn't know or did not make the decision.

Comments suggest that privacy concerns are the main reason for those who wanted more information, and these provide guidance for APNIC for future discussions. It was suggested that "some information/data cannot be given due to confidentiality agreements as well as security issues" and that it would need to be known "how this information is used before releasing to APNIC".

When analysed from a sub-regional perspective, respondents in South Asia were the most likely to indicate that they would be willing to participate with 61% providing positive support.

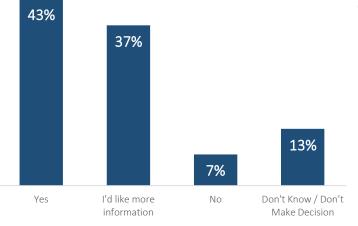
Oceania respondents were least likely to be willing to contribute, with only 29% indicating they or their organisation would be willing to participate. However, 41% of respondents in Oceania indicated they would need more information to make a decision on whether to be involved, with references within the free text comments to security of shared data and privacy concerns. This may be reflective of the stringent privacy framework in place in some economies within the Oceania sub-region.

LDEs were more likely to indicate a willingness to provide data to build trend and benchmark information, suggesting that such initiatives may be of more value to these organisations. Sixty seven percent (67%) of respondents from LDEs agreed that they would participate, compared to only 26% from developed economies.

> 43% of respondents are willing to contribute to trend and benchmark data.

Q 24 - Interest in contributing to trend and benchmark information

(n = 798) (Presented to APNIC Members only)



"I am not against it in principle. I would need to be sure that information provided could not be used in a manner detrimental to our own operations and/or customers (i.e. privacy and anonymity would have to be completely water-tight!)"

Global cooperation & external relations

As in 2014, respondents were asked to indicate which other organisations, groups and communities APNIC should focus its external relations activities on. Respondents were asked to rate the amount of focus APNIC should provide to each organisation type, on a seven point scale from Least focus to Most focus. To allow comparison to 2014, mean scores showing the average level of focus respondents suggest should be dedicated to each group are shown below.

Feedback remained relatively consistent with 2014. While there was a change in the order of priority, the top three groups respondents rated as most important for APNIC to focus on were Network Operator Groups (NOGs), Asia Pacific and Global Internet technical organisations.

Eighty percent (80%) suggested that APNIC should focus its external relations efforts on NOGs. Respondents in LDEs (88%) and South Asia (86%) provided the strongest support for a focus on NOGs.

This supports focus group feedback that capacity building and development activities, such as assistance to NOGs was important to aid Internet development in the region.

Collaboration with other RIRs, national agencies and Internet organisations to assist with cyber crime was another common thread in focus group discussions and this is reflected in the survey findings.

Overall, respondents also supported an external relations focus on Asia Pacific (76%) and global Internet (78%) technical organisations. Seventy-one percent (71%) also suggested focus should be placed on relationships with other RIRs.

Respondents in LDEs were significantly more likely to indicate that APNIC should dedicate most focus on Asia Pacific Internet technical organisations than respondents in developed economies.

Fewer respondents suggested that APNIC should focus on civil society groups, law enforcement agencies or industry associations.

Q 29 - External relations focus.

Mean scores (n = 1,137) (Presented to all respondents)



2016 2014

Member Engagement

This final section of the report looks at some of the more intangible aspects of APNIC Membership.

After investigating APNIC services and strategic priorities, this part of the survey looked at how respondents feel about their Membership of APNIC.

Indicators such as reputation, respect and whether respondents feel involved, consulted and valued were examined and responses provided on a seven point scale from Strongly disagree to Strongly agree.

Eighty-four percent (84%) of respondents provided positive ratings that APNIC is respected in the Internet community. This supports the focus groups, where that APNIC was seen as a well respected organisation that is important to belong to. Despite this, fewer respondents (60%) agree that APNIC Membership enhances their organisation's credibility. When asked about their Membership, 67% of respondents agreed APNIC seeks their opinions on issues relevant to APNIC services and the challenges of the Internet community and 65% also provided positive ratings when asked if they are treated as a valued Member of APNIC.

Despite strong support for APNIC's performance across many areas, this result reflects focus group conversations in which many participants mentioned that their contact with APNIC was mostly transactional in nature, however this should not be regarded as an indication of discontent, it is merely the way in which they interact with APNIC.

Seventy percent (70%) of respondents believe they have enough opportunity to provide feedback and input into APNIC activities. In the words on one respondent, "survey(s) ... are essential for APNIC to get respondents opinion / suggestion in planning activities."

However there was also suggestions for more, and more frequent, meetings with respondents and that "APNIC should have regular meetings with their members."

Although there is strong support for APNIC's performance across many areas, this result reflects focus group conversations in which many participants mentioned that their contact with APNIC was mainly transactional.

Respect

Participants in focus groups indicated that APNIC is a well respected organisation that is important to belong to. This is also supported by the survey results, with 83% of respondents providing a positive rating to the question.

Reflecting feedback in other parts of the survey, respondents from LDEs and South Asia were most likely to agree that APNIC is respected in the Internet community.

Transparency

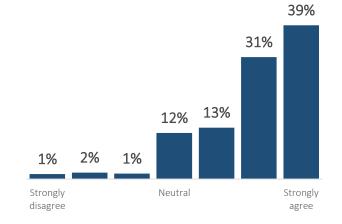
As in 2014, there was majority agreement with APNIC's openness and transparency. Seventy-four percent (74%) of respondents provided a rating of five or higher that APNIC was open and transparent in all its activities.

Once again, respondents in LDEs and South Asia were more likely to provide positive ratings to the question on openness and transparency The mean score for this question of 5.38 compares favourably to all questions related to transparency included in the 2014 survey.

Value

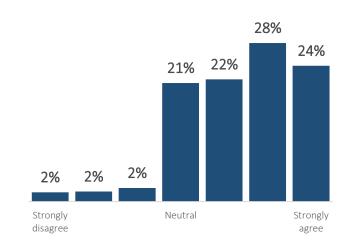
Sixty-six percent (66%) of respondents provided a positive response when asked if they were treated as a valued Member of APNIC.

Although there is strong support for APNIC's performance across many areas, this result reflects focus group conversations in which many participants felt that their contact with APNIC was mostly transactional. However, this should not be regarded as an indication of discontent, it is simply the way in which they interact with APNIC.

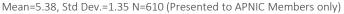


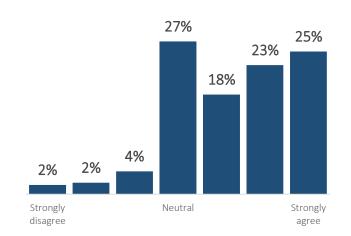
Q 22 - APNIC is respected in the Internet community





Q 22 - APNIC is open and transparent in all its activities





Q 22 - I am treated as a valued Member of APNIC

Mean=5.25, Std Dev.=1.43 n=610 (Presented to APNIC Members only)

Member engagement indicators

Consultation

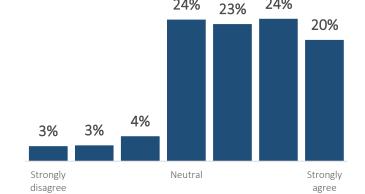
Sixty-seven percent (67%) of respondents were positive in their rating of whether APNIC seeks their opinions on issues relevant to APNIC services and the challenges of the Internet community.

This also supports the question that was asked about having enough opportunity to provide input into APNIC activities on the next page, where 70% of respondents answered in the affirmative.

Credibility

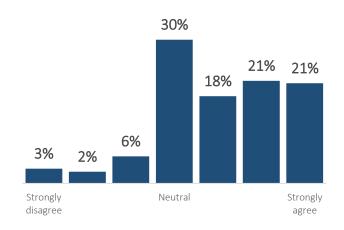
Participants in focus groups indicated that membership of APNIC conveyed status, and that it was it was important to belong, and 60% of respondents to the survey also agreed that Membership enhances their organisation's credibility.

Again, respondents from LDEs (73%) were more likely to provide a rating of five or higher when asked whether Membership enhances their reputation, compared to 46% of respondents from developed economies.



24%





Q 22 - Membership enhances my organisations reputation/credibility Mean=5.02, Std Dev.=1.50 N=610 (Presented to APNIC Members only)

Note: Figures may not sum to 100 due to rounding

"In this market if you are not a Member of APNIC, then you're nobody"

75

24%

Member feedback & involvement

When asked if they believe they have enough opportunity to provide input into APNIC activities, 70% of respondents agreed. Only six percent (6%) indicated they did not have enough opportunities to provide feedback to APNIC.

Respondents in LDE's (82%) and South Asia (77%) were the most satisfied with the feedback opportunities they receive, while 60% of respondents from Oceania believe they have enough opportunity to provide input into APNIC activities.

Some free text feedback suggested reasons why respondents are satisfied with mention that "APNIC has already all the way possible for members to share feedback."

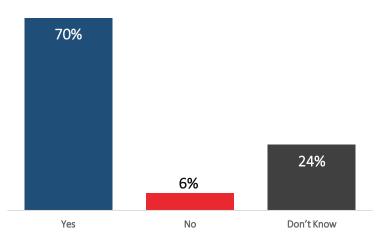
Other feedback, however, provided suggestions about ways in which APNIC might improve or provide greater opportunities for respondents to become involved.

Respondents suggested more frequent meetings and that "APNIC EC must come meet with us to understand our issues." Several other comments suggested APNIC "provide local events that don't cost a fortune to attend', while others thought that APNIC could "invite the Member organizations to participate".

Mention was also made that "there should be earlier involvement in gathering feedback, decision making, thought process, actions and eventual results."

Q 23 - APNIC Members have enough opportunity to provide feedback into APNIC activities

n = 802 (Presented to APNIC Members only)



"We have enough opportunity for providing feedback but I can see people are just ignoring such activities. Need more awareness and implementation on feedback approaches"

Endorsement

Understanding how respondents speak about APNIC to others provides insight into respondents overall perceptions.

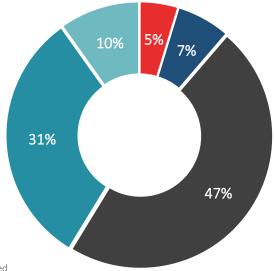
Ten percent (10%) of respondents speak highly of APNIC without being asked and 31% tend to speak highly if they are asked. Very few speak negatively of the organisation, the majority being neutral when speaking about APNIC.

This supports focus group feedback that contact with APNIC is largely transactional for most participants. Further analysis of the data supports this, showing that respondents who have had the least contact with APNIC are more likely to indicate that they are neutral in the way in which they speak about the organisation.

Those respondents who have had a greater number of interactions with APNIC are significantly more likely to provide positive endorsement of APNIC than those with fewer contacts. On average, APNIC Members are more likely to provide favourable endorsement of APNIC than members of NIRs or other stakeholders, although the proportion who speak highly without being asked is consistent at 10%.

Reflecting feedback throughout the survey, respondents from LDEs are the most likely to speak highly of APNIC – 17% speak highly without being asked.

Respondents from East Asia were the most likely to provide negative word of mouth, with 23% indicating they either speak critically or tend to be critical about APNIC. Fourteen percent (14%) of respondents from South East Asia are either critical or tend to be critical when speaking about APNIC. This compares to 7% from South Asia and 4% from Oceania.



Q41 - Respondents Endorsement of APNIC

(n=1,167) (Presented to all respondents)

- Critical without being asked
- Tend to be critical if asked
- I am neutral
- Tend to speak highly if asked
- Speak highly without being asked

	Total	LDEs	Developed	Developing	East Asia	Oceania	South East Asia	South Asia
Sample Size	1167	169	314	685	265	282	257	318
Critical without being asked	5%	4%	1%	7%	11%	1%	4%	4%
Tend to be critical if asked	7%	4%	4%	8%	12%	3%	9%	3%
I am neutral	47%	39%	52%	47%	49%	49%	54%	39%
Tend to speak highly if asked	31%	37%	36%	28%	20%	38%	26%	39%
Speak highly without being asked	10%	17%	7%	10%	9%	9%	6%	15%
Mean Score	3.35	3.59	3.44	3.25	3.04	3.50	3.20	3.59
Standard Deviation	0.92	0.94	0.72	0.98	1.04	0.76	0.86	0.91

"Since APNIC interacts with many leading providers, it can act as a common platform of Knowledge Transfer and providing the best practices [from] across the world."

Conclusion

In conclusion, we would like to take the opportunity to thank all APNIC respondents for participating in the 2016 Survey. Your input is extremely valuable.

The robust sample size of 1,175 provides APNIC with clear direction on the preferences and opinions of the Internet community.

The 2016 Survey highlighted many of the challenges facing the Internet community, and provided many suggestions for ways in which APNIC can assist Members.

We trust this information forms a solid basis upon which APNIC 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.

About Survey Matters

Survey Matters specialise in providing services to the Memberbased 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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