APNIC

09

APNIC ANNUAL REPORT 2009

Asia Pacific Network Information Centre

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Summary of year by Paul Wilson

As we leave one decade and enter another, two major events are taking place that will shape the Internet for decades to come. Internet Protocol version 4 (IPv4) is nearly exhausted and the adoption of IPv6, the next version, is gathering momentum.

IPv4 exhaustion was recognized as early as the late 1980s and the technical community was quick to develop IPv6 by the mid 1990s, however, the industry was at first slow to prepare for and implement the new protocol.

It soon became apparent that encouraging and supporting the implementation of IPv6 would become a high priority for the Asia Pacific Network Information Centre (APNIC). To this end, we successfully launched the IPv6 Program, which has significantly increased awareness of IPv6 and the need to migrate away from IPv4.

As I look back at our activities in 2009, it is hard to ignore an event that has already passed in the early part of 2010. The Number Resource Organization (NRO), a body representing the five Regional Internet Registries, announced in January, that less than 10% of the IANA IPv4 free pool remains available for distribution.

Of course, this event is long anticipated, so when APNIC conducted its regular Member and Stakeholder Survey in 2009, we asked a number of questions about the Asia Pacific community's level of IPv6 preparedness.

It was reassuring to see IPv6 gaining momentum. The community clearly recognizes the need to deploy IPv6 to ensure future growth, end-to-end connectivity, and Internet innovation. Survey respondents urged the APNIC Secretariat to do all it can to support and encourage the adoption of IPv6 in this fast-growing region.

Survey respondents also encouraged APNIC to expand our training activities and support network-engineering education. They urged the organization to invest in Research and Development activities, such as network monitoring and measurement, routability testing, and broader infrastructure areas such as routing security.

The main reason we conduct regular stakeholder surveys is to ensure we satisfy the needs and expectations of the community we serve.

As you will see in the following pages, the Secretariat is moving quickly to respond to these requests with programs and changes already in place by the end of 2009 and others well underway for the new decade.
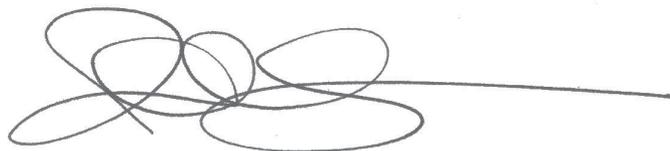
Paul Wilson
Director General
Asia Pacific Network Information Centre

Internet Registry for the Asia Pacific

The Asia Pacific Network Information Centre

As the Asia Pacific Regional Internet Registry (RIR), APNIC's role is to promote the fair distribution and responsible management of IP addresses and Autonomous System numbers. These unique numeric identifiers are a core to the operation of the global Internet. APNIC manages these resources according to policies developed by the Asia Pacific community of stakeholders. The Policy Development Process is a mutually agreed mechanism that facilitates the decision-making process using an open, transparent, bottom-up consensus approach.

The Secretariat implements these policies and serves the administrative needs of Members, other resource holders, and the community at large. APNIC also represents the regional Internet community's interests in global forums and is actively involved in the development of regional Internet infrastructure. It provides training and education, supports technical activities, contributes to the technical standards processes, and collaborates with regional and international organizations.

Acting as a registry of resource holdings, APNIC maintains the public APNIC Whois Database and manages reverse Domain Name System zone delegations.

APNIC is a not-for-profit organization. Membership is open to any stakeholder interested in Internet number resources.

The APNIC Executive Council (EC)

An eight-member Executive Council oversees the APNIC Secretariat operations, including the review of budgets and financial reports. APNIC Members directly elect seven EC Members for a two-year term of office. The Director-General of APNIC serves as the one ex officio Member. EC Members meet monthly, generally by teleconference. The Council also meets face-to-face twice a year during APNIC Meetings. They are not paid for their services.

During the APNIC Member Meeting (AMM) in Manila on Friday, 27 February 2009, the following community members were elected to the APNIC Executive Council: Jian Zhang, James Spenceley, Kuo-Wei Wu and Hyun-Joon Kwon. APNIC thanks them for their ongoing contribution. APNIC would like to thank outgoing EC Member Ming-Cheng Liang, Kusumba Sridhar, and Wei Mao for their services to the APNIC EC.

APNIC Secretariat

Director General

Chief Scientist	Services Area	Communications Area	Business Area	Technical Area
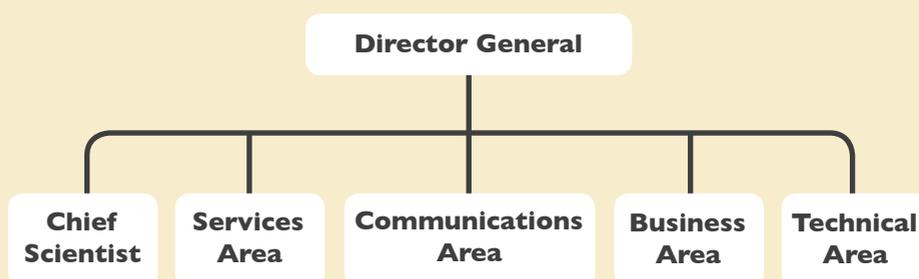
The APNIC Secretariat operates to serve its Members and stakeholders in the Asia Pacific Internet community. Headed by Paul Wilson as Director General, the Secretariat consists of four Areas: Services, Technical, Business, and Communications. As at 31 December 2009, staff numbered 62, with 23 nationalities represented and 25 different languages spoken (including English).

The Asia Pacific Internet Community

Growing Membership

With an active account base of 2,919 (as at 31 December 2009), APNIC account holders contribute their financial support and participate in a wide range of APNIC-sponsored activities.

Membership is open to all individuals and organizations. APNIC Members represent a range of Internet community interests from individual Associate Members, through to large telecommunications companies.

APNIC's Members predominantly consist of Internet Service Providers (ISPs), operators of large networks, and other users of Internet address space throughout the Asia Pacific region.

However, as Internet resources become increasingly important, other organizations, such as domain registries, government regulators, Internet content providers, and the academic community are becoming Members in increasing numbers.

Bringing the community together

The APNIC Secretariat is the administrative organization responsible for providing Member services, maintaining the registry functions, facilitating policy development, enforcing APNIC policies, and conducting a range of other executive duties. The APNIC Secretariat also represents the community's interests by participating in a number of global events. In 2009, these included the IGF, ITU-Telecom World, APECTel, and CommunicAsia, among many others, such as IPv6-related summits, and Network Operator Group (NOG) events.

APNIC is a community. It provides Members and other stakeholders with channels to share knowledge, build professional networks, participate in policy development, and learn valuable skills. Engaging more than just the resource holders, APNIC stakeholders include industry participants, government representatives, regulators, academia, the media, the technical community, civil society, and other not-for-profit organizations.

Member Statistics

Members as at 31 December 2009

Members	2009	2008
Associate	449	312
Very small	472	345
Small	823	813
Medium	276	251
Large	106	92
Very large	31	30
Extra large	13	12
Total Membership	2,170	1,855
Non-Member accounts	749	711
Total	2,919	2,566

APNIC Membership Growth
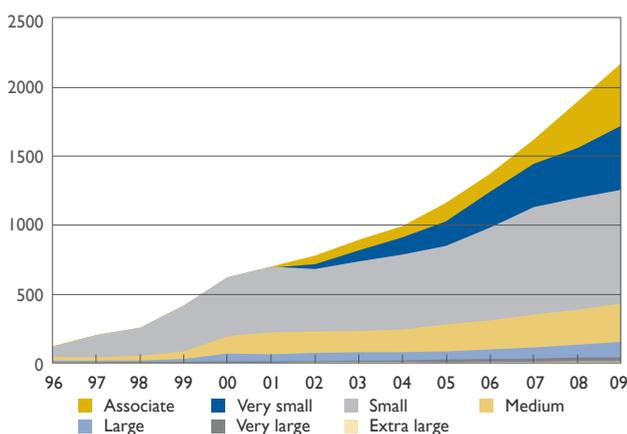
Geographic Distribution of Members
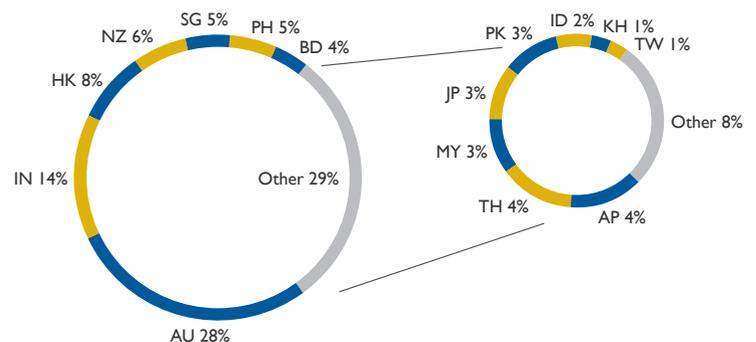
Member and Stakeholder Survey

Understanding Community Needs

As part of its commitment to continuous improvement, APNIC conducts a regular Member survey, asking for the views and opinions of the APNIC community. Outcomes contribute meaningfully to future planning and guide Secretariat decisions regarding operational planning and utilization of Member fees.

Results of the 2009 survey urged APNIC to serve the community through vigorous involvement with the activities and events of operator groups, ISP associations, governments, and educational institutions.

2009 Member and Stakeholder Survey

The 2009 survey aimed to provide valuable input to the APNIC Secretariat from stakeholders throughout the Asia Pacific region. This feedback helps to ensure APNIC satisfies the needs and expectations of the community it serves.

Commissioned by the APNIC Executive Council (EC) in late 2008 and conducted independently by management consultants KPMG, the study sought the opinions of a wider community of stakeholders across the region. In past years respondents came from the APNIC Membership base; in 2009 other groups such as educators, the media, regulators, and government representatives were called upon for feedback.

KPMG delivered its results in March 2009 and these were initially presented on the APNIC website, with analysis provided to Members during the APNIC Member Meeting in Manila, The Philippines on 27 February 2009.

The 2009 survey received 601 responses from 44 Asia Pacific economies, representing an increase of almost 100% over the 2007 response. Importantly, this result shows that input from a substantial cross-section of the community drives APNIC activities and that the levels of interest in APNIC activity remain high.

Number of respondents
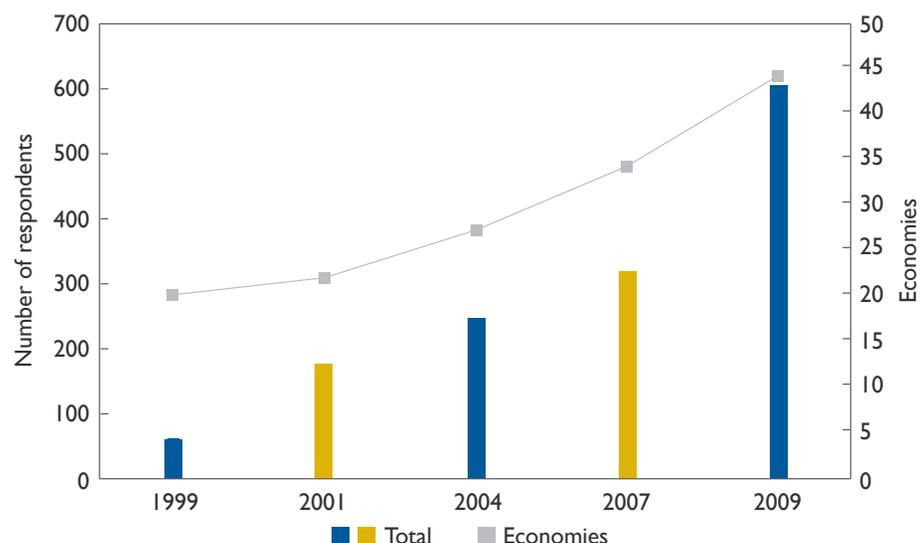
IPv6 Readiness Survey

The 2009 Member and Stakeholder Survey asked for information about IPv6 readiness in the region. Results indicated that IPv6 deployment has gained momentum in terms of planning, resources, budgeting, and expertise. With around 40% of respondents already indicating a commitment to IPv6, APNIC believes deployment will continue to accelerate as IPv4 exhaustion gets closer.

APNIC initiatives, including APNIC training and the IPv6 Program, are shown to be working well. As you will read later in this report, these programs are highlighting the need for IPv6 adoption and providing community members with skills, knowledge, and technical familiarity with IPv6.

The community is responding. APNIC continues to make IPv6 address allocations, with Australia, Japan, Korea and Taiwan already holding significant address space.

Survey respondents agreed that Governments could support IPv6 deployment activities by various means, such as by requiring IPv6 compliance within their own infrastructures. In response, the IPv6 Program now regards Government as a key stakeholder, presenting at significant Governmental events, holding roundtables, and arguing the case for IPv6.

The EC recognized and applauded the priority on IPv6 readiness demonstrated by many sectors of the Asia Pacific Internet community and directed the Secretariat to strengthen APNIC's leadership role in relation to issues of IPv4 exhaustion and IPv6 deployment. The EC will support the APNIC Secretariat to continue to expand its promotion of IPv6-related activities.

The EC would like to sincerely thank all survey participants for their valuable input, as well as those who promoted the survey in their communities and helped to contribute to its success.

Have you deployed or are you ready for immediate IPv6 deployment?

YES 37%
NO 63%
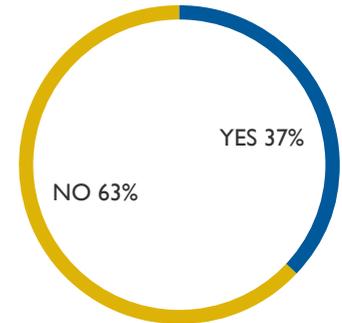
Does your organization have a formal plan to deal with the deployment of IPv6?

YES 40%
NO 60%
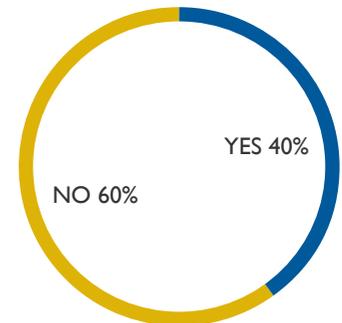
Has your organization budgeted for future resource allocation for IPv6 deployment?

YES 38%
NO 62%
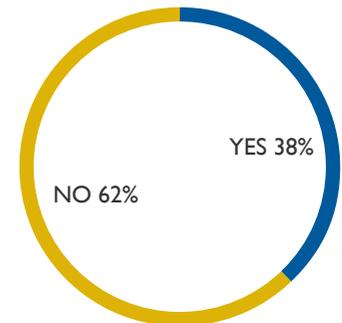
Is IPv6 related information and training services easily available to you?

NO 51% YES 49%
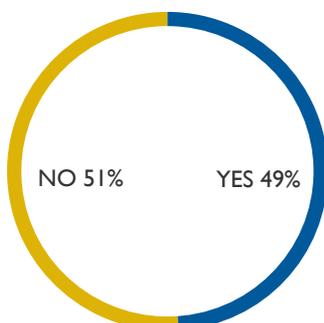
Do you have the knowledge and expertise required to move to IPv6?

NO 46% YES 54%
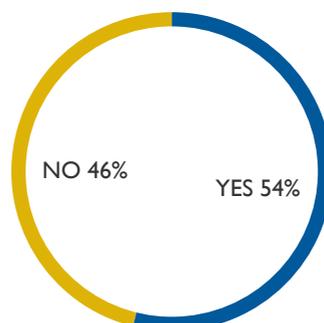
Has your organization allocated resources (human or financial) for IPv6 deployment?

YES 39%
NO 61%
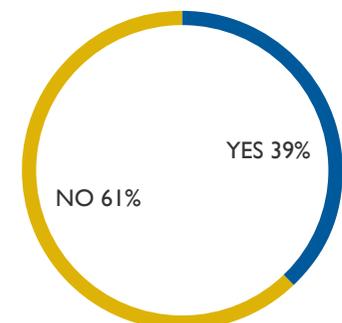
Survey Results

In its response to the KPMG report on the outcomes of the 2009 APNIC Member and Stakeholder Survey, the Executive Council was pleased to note a high overall level of satisfaction with the current services delivered by APNIC. Member response averages ranged from 6.73 to 8.23 (out of 10).

Top 5 Areas of Performance for APNIC

Members were asked to rate APNIC's performance in a number of areas. Results show APNIC performed best in the following five areas:

1. Involvement with activities and events of operator groups, ISP associations
2. Operation of Reverse DNS services
3. Operation of the whois database
4. The overall Member services provided
5. Representation to Governments and industry

Preferred Areas for Future Investment

The Survey asked respondents to indicate where they felt the APNIC Secretariat should invest to best serve the evolving needs of the community.

Training and Education activities together rated 36% of total recommendations for resource allocation, followed by IPv6 Deployment support with 18%, and Streamlining request processes with 16% (of Member responses). This provides a clear indication of Member priorities in services development and an indication of planning priorities in 2010.

Top 5 Areas for Investment
Stakeholders indicated APNIC should prioritize:

1. **Research and development activities (for example: network monitoring and measuring, routability testing)**

2. **Supporting network engineering education in the Asia Pacific region**

3. **Expanding training in scope, geographical coverage and online options**

4. **Supporting IPv6 deployment**

5. **Increasing support of the community's efforts to adopt IPv6**

* **The survey also revealed that Members would appreciate the streamlining of resource requests and allocation processes.**

Summary of APNIC's Response

APNIC was able to respond immediately, addressing some community requests with existing programs and new initiatives. Additionally, provisions in the 2010 budget will allow the realization of plans put in place during the 2009 reporting period.

In 2009, APNIC paid particular attention to meeting the mandate set by the survey respondents. It increased the number of people trained face-to-face by nearly 400 and expanded its interactive web-based teaching program. APNIC provided funding and other forms of support for Fellowships and a number of community events and meetings.

Many Member Services functions, such as the Membership application and resource request process, reverse delegation functionality, and MyAPNIC contact management were all improved through the year.

Building on efforts made in 2008 to collaboratively work together and share resources and expertise, APNIC signed Memorandums of Understanding (MoUs) with a number of institutions and organizations.

The IPv6 Program picked up pace in 2009 after launching in late 2008. The program made a number of significant advances reaching out to audiences that APNIC had never previously reached with its IPv4 exhaustion and IPv6 adoption message.

Securing the Future

Business Continuity, high availability, and disaster recovery were a focus in both the Technical Area and the Business Area with a dual approach of documenting plans and working hard to identify and eliminate potential points of failure. High availability and a disaster recovery strategy formed a key part of the Business Continuity Plan put in place by APNIC during the 2009 reporting period.

Resource security was also a focus. APNIC has been involved in the IETF process to develop solutions to the need for better security over IP address and AS number resources. APNIC continues to lead the way and is working hard with other Regional Internet Registries to cooperatively build the framework and services required to provide RPKI certification for resources.

APNIC began a three-phase approach to the implementation of Domain Name security (DNSSEC), in an effort to establish authenticity and integrity of the domain system data. The DNS is a longstanding area of vulnerability for the Internet and the reverse zones managed by APNIC are an important part of the chain for reverse DNS, linking the in-addr.arpa and ip6.arpa delegations at IANA to Member delegations within the blocks assigned to APNIC.

This report explains in detail how APNIC responded to the investment priorities indicated by the survey.

1

Research and Development

To meet the needs of the regional and global Internet Community, APNIC continues to position technical research and development activities as a high priority.

Monitoring and Measuring

To provide better access to Internet network monitoring and measurement, APNIC began sponsoring and providing for the installation and maintenance of 12 Test Traffic Management (TTM) servers located with hosting partners around the Asia Pacific region.

The TTM servers are dedicated measurement devices physically installed at various test sites and managed remotely by the European Internet registry, RIPE-NCC. These servers comprehensively and continuously measure key Internet connectivity parameters. The data enables network operators to diagnose problems involving external networks and helps detect long-term trends in external connectivity for planning purposes.

APNIC is providing funding and equipment for 12 TTM hosting partners to deploy nodes in a variety of locations across the Asia Pacific region. While the Brisbane node went operational in 2008, other nodes listed here are in various stages of deployment. APNIC is yet to sign hosting partners for 4 TTM nodes.

Day in the Life of the Internet

APNIC continues to participate in the 'Day in the Life of the Internet' project. The aim of the project is to collect data for use by network researchers to aid in the discussion of the operational future of the Internet. In 2009, APNIC captured the DNS packetflows to its DNS servers in Brisbane, Hong Kong, and Tokyo, contributing 478 gigabytes of packetflow data over three days of the project. APNIC plans to participate in this project again in 2010.

Contributing to Standards

APNIC participates in the IETF SIDR working group, drafting proposals for standardization and promoting research in resource security and validation.

APNIC also cooperates in a global development exercise and has released a publicly visible 'portal' system based on the draft documents above. That provides initial services in address security, including a public repository, certificate management and assistance to sign routing and other attestations.

APNIC continues to attend IETF and work on Drafts.

Resource Certification

APNIC's Resource Certification program is a major step in securing IP resources as part of a broader effort to further secure the global Internet infrastructure of addresses and routing.

Resource Certification is based on an IETF specification for Resource Public Key Infrastructure, or RPKI, which enables the creation of digital certificates for Internet number resources. These Resource Certificates extend the public key certification model in a way that allows resource holders to affirm their 'right-of-use' in such a way that other operators have a high degree of confidence in the validity of the claim.

Following the completion of the first phase, with the launch of the upgraded MyAPNIC website, APNIC is now coordinating with the other RIRs to take this project to the next level – by making it a global effort. This includes establishing processes for certifying the ERX space. It is also a major topic of collaboration at the IETF, with many drafts proposed.

DNSSEC – adding security to the DNS

APNIC spent 2009 preparing to deploy Domain Name security (DNSSEC). The reverse zones managed by APNIC are an important part of the chain for reverse DNS, linking the in-addr.arpa and ip6.arpa delegations at IANA to Member delegations within the blocks assigned to APNIC.

Adding DNSSEC to a DNS zone requires careful preparation. APNIC will deploy DNSSEC in a three-phase plan. The first phase, scheduled for implementation in early 2010, will be to develop the procedures and systems to operate a DNSSEC platform as a test service. The second phase will be an operational test to ensure continuity of service through DNS, DNSSEC, and disaster recovery operations, ending with a deployment to production services. The third phase will be the development and deployment of services and training for APNIC Members to run DNSSEC across their reverse zones and supply secure delegation information to APNIC, securely linking the DNSSEC-signed zones of APNIC Members to the parent zones operated by APNIC.

To further enhance the reliability of reverse delegation, APNIC implemented a secure channel for updating reverse delegations in 2009.

High Availability

In a program to increase the redundancy, reliability, and robustness of core APNIC services and the critical systems that support them, the APNIC technical team increased the scope of service availability monitoring and undertook a rigorous process to identify the most critical services and identify and eliminate failure points. Redundant systems, a data centre restructure which included the deployment of redundant connectivity, the wider use of virtualization techniques, and the introduction of load balancers paid off during 2009 by reducing unplanned outages.

High availability and a disaster recovery strategy formed a key part of the Business Continuity Plan put in place by APNIC during the 2009 reporting period.

APNIC Co-Authored IETF Drafts

A Profile for Resource Certificate Repository Structure:
draft-ietf-sidr-repos-struct

A Profile for x.509 PKIX Resource Certificates:
draft-ietf-sidr-res-certs

A Protocol for Provisioning Resource Certificates:
draft-ietf-sidr-rescerts-provisioning

A Profile for Algorithms and Key Sizes for use in the Resource Public Key Infrastructure:
draft-ietf-sidr-rpki-algs

Manifests for the Resource Public Key Infrastructure:
draft-ietf-sidr-rpki-manifests

A Profile for Trust Anchor Material for the Resource Certificate PKI:
draft-ietf-sidr-ta

Additionally APNIC worked on the Certification Profile and Practice Statements.

Supporting Community Education

ISIF Grants Program

After reviewing 148 applications from 22 economies, the Information Society Innovation Fund made grants to recipients from the following economies.

Economies	
	Thailand
	India
	Sri Lanka
	Pakistan
	Vietnam
	Indonesia
	Nepal
	The Philippines
Total grants	USD 321,701

APNIC actively supports network engineering education in the Asia Pacific region by supporting operator groups, presenting at events, running its own conference programs at APNIC Meetings, collaborating with other organizations, institutes, and societies, and by running workshops, presentations, and other activities on the global stage.

These take a broader view of education than the APNIC training activities. APNIC directly assisted eight community groups with funding for their events. APNIC also participated at these events, sending speakers, hostmasters, liaison officers, and helpdesk personnel to participate and assist.

APNIC has six Liaison Officers who are available to provide local cultural and language support to APNIC activities and collect feedback from community groups.

Collaborating in other activities and by representing the community at several events inside and beyond the Asia Pacific, allows APNIC to increase awareness and understanding of issues and challenges faced by the Internet.

Internet Governance

Participation in Internet Governance is important to ensure the voice of Asia Pacific operators, service providers, civil society, Governments, and others are well represented on the global stage. Throughout 2009, APNIC participated in Internet Governance activities at many levels.

Working with the NRO, APNIC contributed to the success of the Internet Governance Forum (IGF) in Sharm El Sheikh, Egypt in November 2009. Working to highlight the important issues surrounding responsible stewardship and management of critical Internet resources APNIC senior staff spoke at the following workshops:

- Adopting IPv6: What You Need To Know
- Managing Internet Addresses: Global and regional viewpoint
- Analyzing resource requests: present and future (principles, criteria, policies, assessment, challenges)
- Introduction to Internet Operations

APNIC also participated in the ITU World Technology Policy Forum 2009, where, as an ITU-D sector member, it provided a comprehensive response to the Telecommunication Standardization Bureau-issued Questionnaire on IPv6 address allocation. APNIC responded on behalf of all RIRs as the authoritative source of information. APNIC also participated with ICANN, ISOC and other Members of the NRO at the ITU Telecom World to reach out to a wider set of stakeholders.

APNIC supports education in the Asia Pacific by running its own conference program twice per year at APNIC Meetings. It provides Fellowships which assist people in developing economies to attend these and other events. It also works closely with other organizations assisting them with resources, knowledge, and materials to promote their own programs and education.

APNIC Meetings 27 and 28

APNIC stages two conference meetings each year at different locations throughout the region. In 2009 Manila, The Philippines played host to APNIC 27 and Beijing, China hosted APNIC 28.

Both events were a success attracting significant numbers. While APNIC Meetings are the venue for Policy discussion and the APNIC Member Meeting, the conference program continues to attract support. APNIC 27, held in conjunction with APRICOT 2009, offered an excellent opportunity for nearly 500 Internet professionals to expand their skills and increase their knowledge.

Web-based online participation gathered momentum following improvements to the system in Manila and Beijing. Participation figures for online remote delegates based on unique IP address at APNIC 28 in August were 288 individuals.

Fellowships

The APNIC Fellowship Program offers financial assistance to enable people in selected economies to attend APNIC meetings. During 2009 APNIC provided fellowships for 20 individuals from the following:

- The Philippines
- Mongolia
- Indonesia
- Pakistan
- Bangladesh
- Papua New Guinea
- Cambodia
- Sri Lanka
- Malaysia
- Nepal
- Fiji
- Thailand

Memorandums of Understanding

Building on efforts made in 2008 to collaboratively work together and share resources and expertise, APNIC signed Memorandums of Understanding (MoUs) with many institutions.

Participation in these agreements gives APNIC the opportunity to learn more about local conditions, share expertise and take part in discussions about Internet development.

MoUs Signed in 2009

- Networkers Society of Pakistan (NSP)
- Philippines Network Operators' Group (PHNOG)
- The Advanced Science and Technology Institute (ASTI)
- Task Force on IPv4 Address Exhaustion, Tokyo, Japan
- BII Group Ltd., Beijing, China
- The Taiwan Network Information Center (TWNIC)
- Universiti Sains Malaysia

Meeting delegates numbers

APNIC 27 and APRICOT

Total delegates	473
Delegates at APNIC Member Meeting	114
Economies represented	40
APNIC Member organizations represented	113

APNIC 28

Total delegates*	272
Delegates at APNIC Member Meeting	101
Economies represented	25
APNIC Member organizations represented	51

Remote participation events

Suva, Fiji	10
Colombo, Sri Lanka	22
Kuala Lumpur, Malaysia	12
Dhaka, Bangladesh	35

* A record attendance at a standalone meeting.

Expanding Training Activity

Face-to-Face Training		
Number of:	2009	2008
Attendees	1870	1480
Courses	77	63
Economies	22	21
Locations	36	27

eLearning interactive		
Number of:	2009	2008
Attendees	80	
Economies	7+	

IPv6 Training in 2009	
Economies	14
Locations	19
Workshops	13
Tutorials	10
Total Courses	23
Total Participants	825

In 2009, APNIC continued to expand training initiatives throughout the region and beyond, conducting 77 courses in 36 locations. APNIC Trainers constantly travel the region bringing affordable training courses to as many places as possible. Focusing on training in economies most in need resulted in the first APNIC training courses for Myanmar in 2009.

While face-to-face training is a core deliverable, APNIC recognizes the geographic challenges to deliver training and education across the region. Accordingly, APNIC delivered on a key community request for wider geographic reach with the commencement of the eLearning program, in March 2009.

Online Interactive

APNIC's eLearning-Interactive system allows APNIC Training to deliver live Web-classes on Internet Resource Management (IRM), DNS, Security, and IPv6 deployment to students across the region. Utilizing DimDim as its software platform, eLearning-Interactive allows trainers to interact with trainees via IM chat and use features like virtual whiteboards and screen-sharing.

These Web-classes form part of APNIC's Blended Learning Environment, which also includes face-to-face training and workshops, and self-paced online modules to provide continuity of learning.

Delivery of these classes focus on time-zones to enable people from different economies to participate.

Training Collaboration

APNIC Training develops partnerships with regional organizations to ensure key training is delivered to APNIC's diverse audience, in particular, those Members in developing economies. In 2009, APNIC Training worked closely with Team Cymru to provide botnet and network forensics training, focusing on dealing with the latest threats to network security. Two-day events were held in Suva, Fiji and at NZNOG. Joint training activities with organizations such as IntERLab, AIT, AusCERT, and many others enabled course delivery at SANOG, the IPV6 Global Summit, APJII Indonesia, and several other community events.

In 2009, APNIC Training re-configured and upgraded the Training lab to facilitate advanced technical workshops for Members, particularly on IPv6 deployment. The lab upgrade included additional network interfaces on routers, more routers, servers and software. Also during the year, content for IPv6 training was expanded with more practical ISP/IXP scenarios introduced to the courses.

Activity Map

Beijing ★ ● ■
Seoul ●
Hiroshima ▼
Tokyo ■
Lahore ● ■ ✚
Changsha ●
Taichung ■
Kochi ◆
Mumbai ● ■
New Delhi ■
Taipei ● ◆
Karachi ●
Hanoi ◆
Dongguan ●
Hyderabad ●
Dhaka ● ▲
Hong Kong ● ■
Bangalore ●
Yangon ●
Vientiane ●
Manila ★ ■
Tamuning ●
Chennai ● ✚
Bangkok ● ■ ✚
Phnom Penh ●
Colombo ● ▲
Kuala Lumpur ● ▲ ✚
Bandar Seri Begawan ●
Port Moresby ● ■ ✚
Singapore ● ▼
Nadi ● ■ ✚
Jakarta ●
Yogyakarta ● ◆
Papeete ✚
Suva ▲
Brisbane ●
Sydney ✚
Auckland ● ■ ✚
Melbourne ■
Wellington ●

★ APNIC Meetings
● Training face to face
▲ APNIC Remote Participation Sites
■ IPv6 Summit
✚ NOG Meeting
◆ NIR OPM
▼ Other Meetings

Training partnerships

- Team Cymru
- IntERLab, AIT
- AusCERT
- International Training Institute (ITI)
- National University of Laos (NUOL)
- Republic Polytechnic (RP)
- ISP Association of India (ISPAI)
- National Internet Exchange of India (NIXI)
- ISP Association of Bangladesh (ISPABD)
- The Networkers' Society of Pakistan
- The Advanced Science and Technology Institute

Joint Training Activities

- SANOG
- IPv6 Global Summit/IPv6 Next Generation Internet Summit (China)
- APJII Indonesia
- PACINET/PICISOC
- ICANN/APTLD
- IPv6 Summit (India)
- PACNOG
- IPv6 World Asia (Hong Kong)
- China ISP Union
- TWNIC

Supporting IPv6 Deployment

The IPv6 Program aims to inform stakeholders of IPv4 address exhaustion and the necessity for rapid adoption of IPv6.

The Program gained momentum and influence in 2009. Activities ranged from small roundtable briefings with government representatives, to presentations and workshops at larger events. APNIC also produced new marketing and promotional materials such as brochures, flyers, fact sheets, and multimedia. Online materials, for both the APNIC site and the community Wiki site, ICONS, included practical information customized for each of the stakeholder groups targeted.

The IPv6 Program supports the community through various outreach activities. Alliances with other IPv6-related organizations give APNIC an opportunity to present information on IPv6 transition and to support each other's activities through effective information exchange.

Working closely together, APNIC's internal resources, including the APNIC Training Unit, APNIC Technical Unit, and the APNIC Resource Management Unit consolidated APNIC's efforts to demonstrate effective IPv6 deployment processes.

Delivering APNIC Services via IPv6

All key APNIC services are now available via IPv6 including:

- MyAPNIC
- DNS servers
- FTP servers
- Whois queries
- www.apnic.net
- Online chat
- IPv6 ICONS wiki
- Email servers

IPv6 Program Objectives

In line with the community's request to support the Asia Pacific's efforts to deploy IPv6, the APNIC IPv6 Program has the following objectives:

- Gather empirical data about IPv4 unallocated address space exhaustion and IPv6 transition.
- Monitor technical developments in relation to methods to cope with IPv4 unallocated address space exhaustion and IPv6 transition.
- Research the best practices with regard to IPv6 transition mechanisms and technologies.
- Distribute reports that address the information requirements of each stakeholder within the Asia Pacific Internet community.
- Collaborate with national and regional organizations through strategic alliances that can help bring our messages to the community.

APNIC
IPv6 Program

Supporting efforts to adopt IPv6

In a wider sense, APNIC supported community efforts to adopt IPv6 by reaching out to policy makers and regulators through participation at APEC TEL conferences, and by organizing roundtables and face-to-face meetings with government representatives.

After initially participating at APEC TEL 39 during April in Singapore, APNIC became a co-organizer for a one day IPv6 session entitled "Workshop for IPv6: Facing the Future" at APEC TEL 40. APNIC Executive Council member, Professor Ma Yan of the Beijing University of Posts and Telecommunications, proposed the workshop. Several economies and TEL Guests, including APNIC, supported his proposal.

Paul Wilson, APNIC's Director General, delivered a presentation titled 'Transforming the Internet: from IPv4 to IPv6'. The goal of the presentation was to raise awareness among policy makers and regulators about IPv4 address exhaustion and the importance of a smooth transition to IPv6. Representatives from government and industry also participated as speakers at the event.

The workshop provided an opportunity to achieve cross-economy and cross-industry information exchange regarding IPv6 deployment.

APNIC also initiated roundtable meetings with The Indonesian Telecommunications Regulatory Authority, Asosiasi Penyelenggara Jasa Internet Indonesia, the Indonesian Internet Registry, and The Office of the Government Chief Information Officer (OGCIO) of the Government of the Hong Kong Special Administrative Region.

IPv6 Program Presented at:

- 4th TEC IPv6 Workshop, Mumbai, India
- 11th APNG
- 2009 Future Internet Day in Taipei
- 2009 Global IPv6-Next Generation Internet & Mobile Internet Summit
- 28th APAN meeting 2009 in KL
- APEC TEL39
- APEC TEL40
- Australian IPv6 Summit
- CommunicAsia 2009
- Global IPv6 Summit in Taiwan 2009
- Global IPv6 Summit Korea 2009
- IGF 2009
- India IPv6 Summit
- Indonesia IPv6 Workshop 2009
- INET Kuala Lumpur
- Internet Week 2009 in Tokyo
- IPv6 World: Asia
- NZNOG09
- PacInet 2009
- PITA 13th Annual General Meeting, ICT Conference & Tradeshow 2009
- SANOG13
- Thailand IPv6 Summit 2009
- The 7th Annual CTO Forum

Reaching a wider audience

To support its presence at ICT trade show CommunicAsia, APNIC developed a multimedia presentation, "Expanding the Internet: From IPv4 to IPv6", to give less technical stakeholders an understanding of IPv4 exhaustion and some planning suggestions for IPv6 deployment.

http://www.apnic.net/ipv6-multimedia

Making Things Easier

MyAPNIC Users

Number of:

Unique visitors	21,570
Visits	42,851
Registered users	2,022

Member Services

Number of:

Helpdesk chat requests	2,399
Helpdesk tickets resolved	12,796
Administration tickets resolved	2,637
New Member accounts established	411

During the past year APNIC continued to automate and simplify the Member services procedures. Activities included a major update to the Member Services website, MyAPNIC, making it faster and easier to use, while also adding new functionality such as IPv6 Reverse Delegation facilities.

A New-Look MyAPNIC

APNIC launched a completely new look MyAPNIC after an extensive redesign of the user interface. The major revamp gave the secured Member Services website a cleaner, faster design that was easier for users to navigate.

Through the course of the year, APNIC introduced a series of feature improvements to MyAPNIC including improved contact management, and a new Membership Fee calculator that enables account holders to accurately estimate fees based on their resource holdings. The fees calculator can also predict a Member's future membership fee based on estimations of growth in their organizations' requirements.

MyAPNIC is a key service delivery platform, which APNIC continues to invest in heavily as part of the continuous improvement program. In addition to the introduction of an enhanced Reverse Delegation feature, which now incorporates IPv6 support, existing Members can request resources using simplified request forms contained entirely within the MyAPNIC interface.

As a result Members are able to submit their requests in a greatly simplified manner within the secure MyAPNIC environment. Users can also manage all reverse delegations, including IPv4, IPv6 and AS numbers.

New APNIC Website

After a considerable effort, APNIC launched a vastly improved public website in 2009. The quality of information now provided to the Membership, other stakeholders, and the public is not only higher, it is now more accessible thanks to the redesign.

The new and improved APNIC website, rolled out in May 2009, implements a Content Management System, allowing easier and more frequent updates to information, an improved events calendar, and many interactive features. With a wealth of new content, the new site is easier to navigate and allows viewers to quickly access frequently used content.
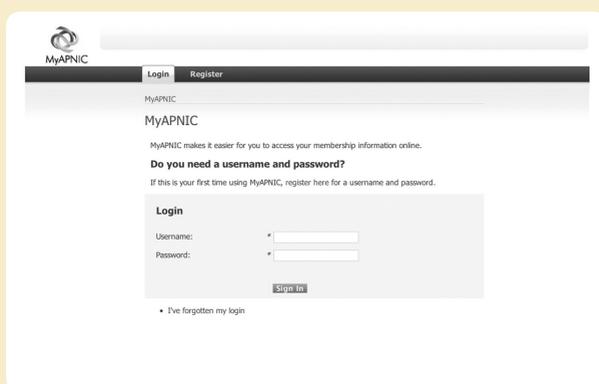
2009 Policy Outcomes

The APNIC Membership and the broader Asia Pacific Internet community develop policies according to a formal Policy Development Process (PDP) at face-to-face meetings and in mailing list discussions. All policy discussions are open to remote participants via online webcasting tools that feature video, audio, transcription and interactive online chat. APNIC also provides video conferencing events at select locations.

During 2009, 13 proposals were discussed with five reaching consensus. Two of these were global policy proposals, which are awaiting the endorsement by other RIRs prior to implementation.

The following proposals reached consensus and were endorsed by the Executive Council:

prop-050: IPv4 address transfers

This policy removes restrictions on the transfer of registration of IPv4 address allocations and IPv4 portable address assignments between current APNIC account holders.

*prop-069: Global policy proposal for the allocation of IPv4 blocks to Regional Internet Registries

This is a global policy proposal governing the allocation of reclaimed IPv4 address space from IANA to the Regional Internet Registries (RIRs) after the IANA's existing free pool is depleted.

prop-073: Simplifying allocation/assignment of IPv6 to APNIC Members with existing IPv4 addresses

This proposal directs the APNIC Secretariat to automatically assess and provide IPv6 resources to APNIC Members that currently hold IPv4 resources in the APNIC registry, but do not hold IPv6 resources in the APNIC registry.

*prop-074: Internet Assigned Numbers Authority (IANA) Policy for Allocation of ASN Blocks (ASNs) to Regional Internet Registries

This is a global policy proposal that extends the date by which IANA will cease to make any distinction between 16-bit and 32-bit only ASN blocks to 31 December 2010.

prop-075: Ensuring efficient use of historical AS numbers

This is a policy proposal to recover unused historical AS numbers for eventual reassignment to other APNIC account holders.

* These proposals are pending the remaining stages of the global policy process

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The following proposal was returned to the mailing list for further discussion:

prop-076: Requiring aggregation for IPv6 subsequent allocations

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The following proposals were returned to their authors for further consideration:

prop-077: Proposal to supplement transfer policy of historical IPv4 addresses

prop-078: Reserving /10 of IPv4 address space to facilitate IPv6 deployment

---

The following proposals were withdrawn by the author(s):

prop-068: Inter-RIR transfer policy

prop-067: A simple transfer proposal

The following proposals did not reach consensus and have been abandoned:

prop-063: Reducing timeframe of IPv4 allocations from twelve to six months

**prop-060:** Change in the criteria for the recognition of NIRs in the APNIC region

prop-070: Maximum IPv4 allocation size

2009 Resource Statistics

IPv4 Address Update

Japan and Mainland China continued to dominate with a combined total of 65% of the address space in the Asia Pacific now concentrated in these two economies. Mainland China received 50 million IPv4 addresses, representing more than one quarter of the global IPv4 address allocations performed in 2009. This appears to point to the strong pace of Internet expansion in both broadband and wireless services in that economy. Japan, followed by the Republic of Korea, both received 11 million addresses.

Total distribution of IPv4 (by economy)

KR 12%
AU 6%
TW 4%
IN 3%
ID 1%
Other 7%
JP 28%
CN 37%

SG 1%
MY 1%
TH 1%
Other 1%
NZ 1%
HK 1%
VN 1%
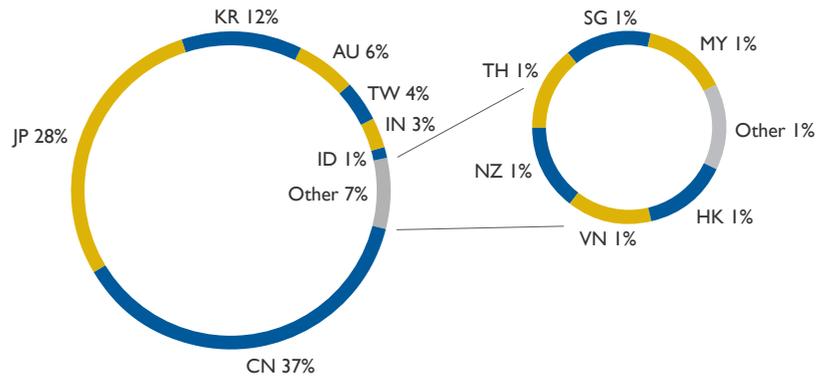
IPv6 Address Update

IPv6 allocations have been steady over the last four years with marginal increases overall from 2008 to 2009. The Australian and Japanese economies showed the highest level of activity in 2009, with Australia receiving 52 IPv6 allocations and Japan 32.

During 2009 APNIC allocated more than 175 /32 of IPv6 address space.

Total distribution of IPv6 (by economy)

KR 21%
TW 9%
Other 1%
AU 34%
JP 34%

SG 0.11%
MY 0.10%
ID 0.11%
HK 0.10%
IN 0.11%
Other 0.05%
NZ 0.16%
CN 0.26%
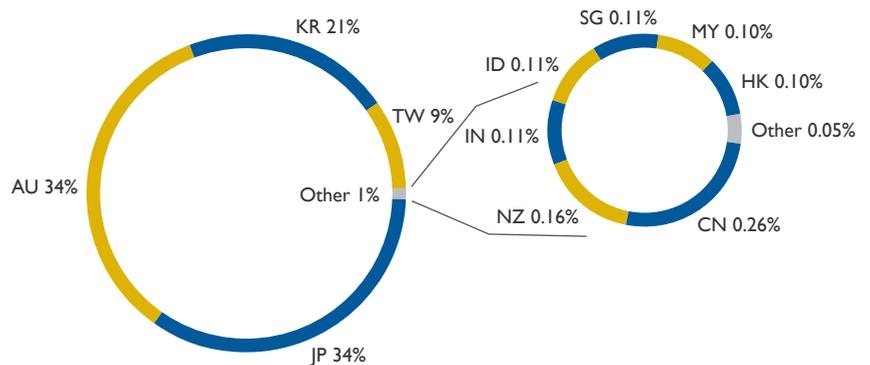
AS Numbers

Increased network maturity in the region is leading to a steady increase in Autonomous System number use. AS number allocations reached almost 6000, with close to 700 allocated in 2009 alone. Australia, Korea, and Japan accounted for nearly 50% of these.

As in 2008, Australian organizations were the most active in 2009, with 129 new AS numbers assigned to them.

In July 2009, APNIC began assigning two-byte AS numbers only where applicants demonstrated that a four-byte only AS number was unsuitable.

Total distribution of AS numbers (by economy)

IN 6%
HK 5%
NZ 5%
ID 7%
CN 8%
JP 14%
Other 24%
KR 15%
AU 17%

VN 2%
BD 2%
MY 1%
SG 3%
Other 5%
TW 3%
PH 3%
TH 4%
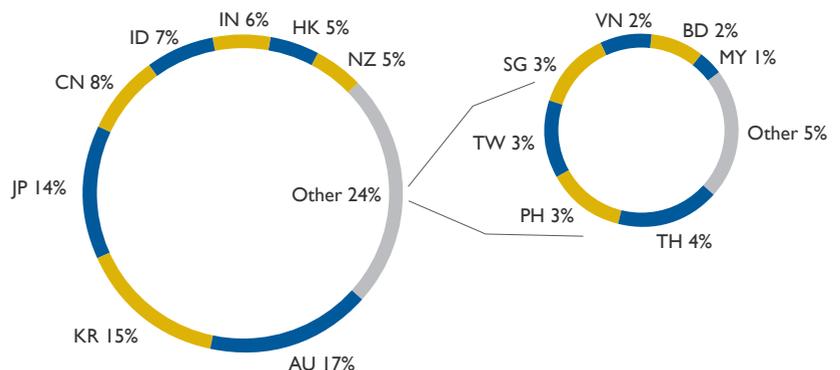
IPv4 address allocated in 2009 (by economy)

(/8s)

Chart showing values for: CN (~3.0), JP (~0.65), KR (~0.65), TW (~0.2), AU (~0.15), ID (~0.1), PH (~0.08), IN (~0.08), Other (~0.22)
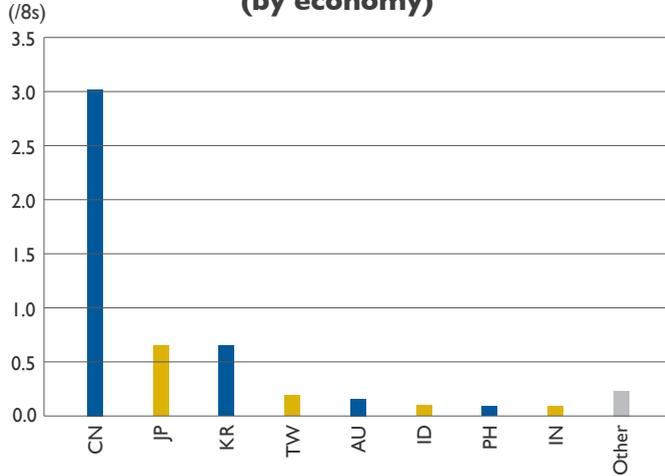
Total IPv4 allocated (cumulative)

(/8s)

Years: 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05 06 07 08 09

Legend: ■ Historical resources ■ APNIC delegated resources ■ Total
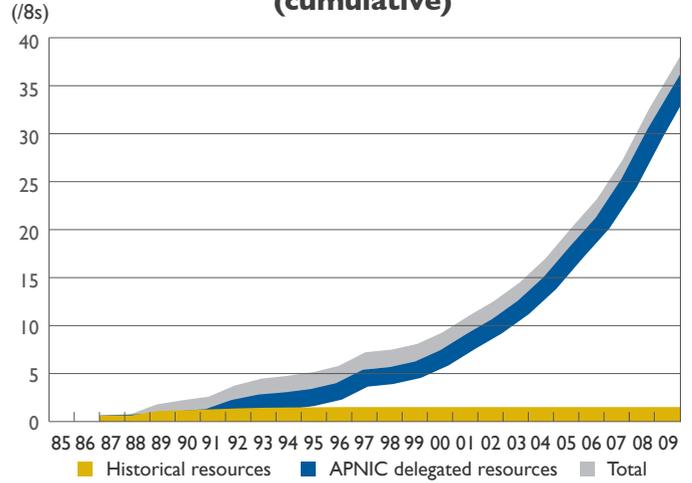
IPv6 address delegations in 2009 (by economy)

Number of delegations

Economies: AU, JP, NZ, SG, MY, HK, ID, IN, CN, PH, AP, KR, PK, TH, FJ, BN, BD, TW, SB, LK, NP, TO, VU, WS, PG, NC, FM, CK
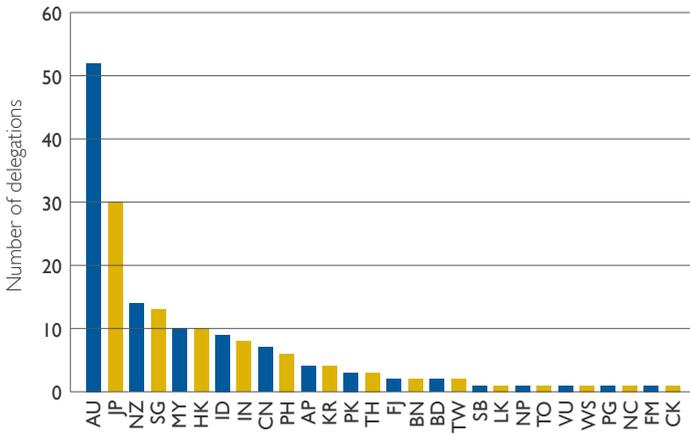
Total IPv6 allocated (cumulative)

(/32s)

Inset chart years: 1999, 2000, 2001, 2002

Years: 99 00 01 02 03 04 05 06 07 08 09
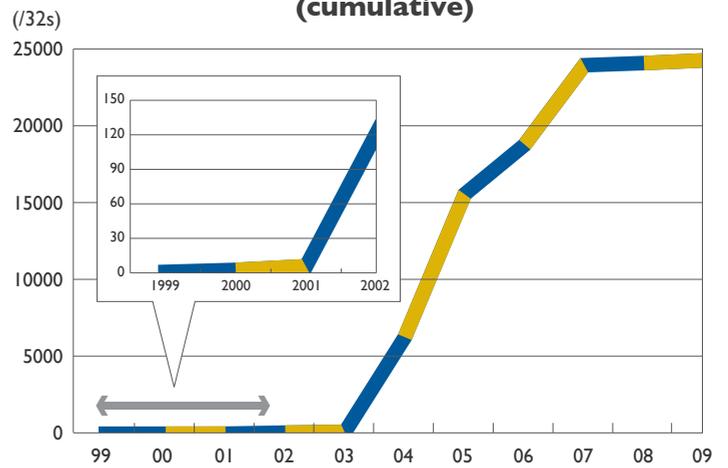
AS numbers assigned in 2009 (by economy)

Number of AS numbers

Economies: AU (~129), IN (~101), ID (~98), KR (~50), PH (~35), TH (~34), HK (~34), NZ (~31), VN (~30), SG (~29), JP (~21), Other (~96)
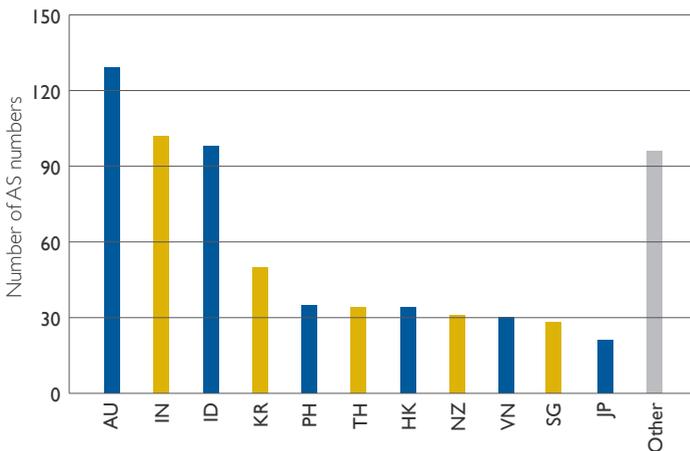
Total AS numbers allocated (cumulative)

Number of AS numbers

Years: 94 95 96 97 98 99 00 01 02 03 04 05 06 07 08 09

19
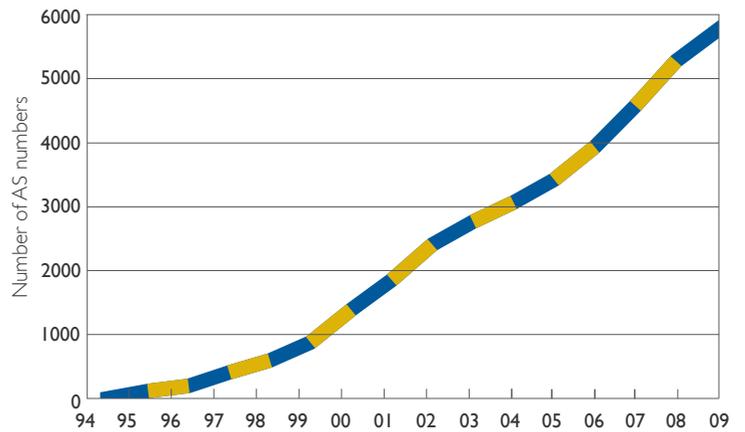
2009 Business and Financial Reports

New 2010 Fee Schedule

Following recommendations by international management consultants, KPMG, and after public consultation with the APNIC community, the APNIC Executive Council approved a new membership fee schedule to apply to all membership renewals from 1 January 2010.

This new fee schedule incorporates a number of key features:

- A 50% discount on membership fees to those Members in the United Nations designated list of Least Developed Countries.

- The introduction of a continuous formula to determine membership fees, which is applied to both current and historical IPv4 address holdings. A separate continuous formula is applied to IPv6 holdings, and the greater of these two determines the membership fee payable.

- Per Allocation fees for NIR and Confederation Members will no longer apply after their membership renewal in 2010.

- NIR and Confederation Members pay a premium of 190% above normal membership fees.

- Resource holdings are assessed on the Member's anniversary date

2010 Budget

APNIC's Activity planning process provides the basis for the development of APNIC's operating budget. The 2010 Activity plan is designed to achieve those priorities identified through the 2009 Member and Stakeholder Survey. The APNIC EC approved the 2010 budget submission in December 2009.

Audit Rotation Policy

The APNIC EC approved a new Auditor Rotation Policy during 2009 requiring that APNIC's auditors be rotated every five years. The APNIC EC approved a new Auditor Rotation Policy during 2009 requiring that APNIC's auditors be rotated every five years. The following accounts were audited by Ernst & Young who under the new policy were appointed auditors for the 2009 financial accounts. The accounts are presented in Australian Dollars.

Balance sheet

	2009 (AU$)	2008 (AU$)	% change from 2008
Current assets			
Cash	7,201,988	6,707,734	7%
Restricted cash - ISIF grant program	145,215	136,680	6%
Term deposit investment	2,338,882	2,300,000	2%
Receivables	496,734	1,518,542	-67%
Others	819,017	536,729	53%
Total current assets	**11,001,836**	**11,199,685**	**-2%**
Non-current assets			
Other financial assets	1,127,795	883,201	28%
Property, plant and equipment	1,607,819	1,708,216	-6%
Long term deposit investment	1,000,000	1,700,000	-41%
Total non-current assets	**3,735,614**	**4,291,417**	**-13%**
Total assets	**14,737,450**	**15,491,102**	**-5%**
Liabilities			
Payables	797,990	629,651	27%
Provisions	1,004,861	985,888	2%
Unearned revenue	4,130,987	5,383,679	-23%
Total liabilities	**5,933,838**	**6,999,218**	**-15%**
Equity			
Share capital	1	1	0%
Reserves	166,674	0	0%
Retained earnings	8,636,937	8,491,883	2%
Total equity	**8,803,612**	**8,491,884**	**4%**
Total liabilities & equity	**14,737,450**	**15,491,102**	**-5%**

Notes:

The balance sheet, income statement, and cash flow statement are the consolidation of APNIC Pty Ltd accounts being recorded in AU$.

For a better understanding of APNIC Pty Ltd's financial position and performance, as represented by the results of its operations and its cashflows for the financial year ended 31 December 2009, the balance sheet, income statement, and cash flow statement should be read in conjunction with the annual statutory financial report and the audit report contained therein.

Income statement

	2009 (AU$)	2008 (AU$)	% change from 2008
Revenue			
Interest income	566,854	771,499	-27%
IP resource application fees	1,194,713	1,053,679	13%
ISIF grant administration received	124,777	154,911	-19%
Membership fees	7,863,971	6,678,051	18%
Non-Member fees	125,598	127,336	-1%
Per allocation fees	1,542,369	1,633,389	-6%
Reactivation fees	8,876	10,144	-13%
Sundry income	161,852	268,444	-40%
Sub-total	**11,589,010**	**10,697,453**	**8%**
Exchange rate gain/(loss)	(38,262)	71,832	-153%
Total revenue	**11,550,748**	**10,769,285**	**7%**
Expenditure			
Communication expenses	156,901	171,713	-9%
Depreciation expenses	718,927	638,668	13%
Donation/sponsorship	122,378	128,885	-5%
ICANN contract fees	358,696	236,503	52%
Impairment investment value	0	334,821	-100%
ISIF grant administration expenses	124,777	154,911	-19%
Meeting and training expenses	138,457	169,293	-18%
Membership fees	69,496	58,282	19%
Other operating expenses	1,026,675	890,166	15%
Professional fees	591,140	552,659	7%
Rent and outgoings	611,804	614,054	0%
Salaries and personnel expenses	6,033,254	5,463,903	10%
Travel expenses	1,404,359	1,359,756	3%
Total expenditure	**11,356,864**	**10,773,614**	**5%**
Operating loss before income tax expenses	**193,884**	**(4,329)**	**-4579%**
Income tax expenses	48,830	147,422	-67%
Operating loss after income tax expenses	**145,054**	**(151,751)**	**-196%**

Cash flow statement

For the year ended 31 December

	2009 (AU$)	2008 (AU$)	% change from 2008
Cash flows from operating activities:			
Receipts from Members and customers	10,998,262	10,892,196	1%
Payments to suppliers and employees	(11,079,607)	(10,746,456)	3%
	(81,345)	145,740	-156%
Interest received	599,800	693,066	-13%
Income tax paid	(208,418)	(178,506)	17%
Net cash inflow from operating activities	310,037	660,300	-53%
Cash flows from investing activities:			
Payments for property, plant and equipment	(556,363)	(696,935)	-20%
Proceeds from sale of property, plant and equipment	5,696	7,269	-22%
Net cash inflow/(outflow) from investing activities	(550,667)	(689,666)	-20%
Net decrease in cash held:	(240,630)	(29,366)	719%
Cash at the beginning of the financial year	6,707,734	6,626,342	1%
Decrease in term deposits maturing in the next three months	661,119	0	0%
Effects of exchange rate changes on cash	73,765	110,758	-33%
Cash reserve at the end of the financial year	7,201,988	6,707,734	7%

APNIC Supporters

*APNIC expresses its sincere thanks to the following organizations that
have supported its operations and training activities in 2009.*

Meeting sponsors

- Asia Pacific Top Level Domain Association (APTLD)
- BJENet
- China Education and Research Network (CERNET)
- China Mobile
- China Motion Telecom
- China Network Information Center (CNNIC)
- China Telecom
- China Unicom
- Dialog Telekom
- DotAsia
- Golog
- Google
- Great Wall Broadband Services
- Hurricane Electric
- Internet Service Providers Association Bangladesh (ISPAB)
- Internet Society (ISOC)
- Japan Network Information Center (JPNIC)
- Kingdom Union
- Korea Network Information Center (KRNIC) of Korea Internet and Security Agency (KISA)
- National Information Infra-structure (NII)
- Pacific Islands Telecommunications Association (PITA)
- PCCW Global
- Shocom
- Taiwan Network Information Center (TWNIC)
- Telekom Malaysia (TM)

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- China ISP Union
- China Mobile
- Cisco Systems
- Cyberport Hong Kong
- Dialog Telekom – Sri Lanka
- Dot.Asia Organisation
- DST Multimedia Sdn Bhd, Brunei
- Extreme Broadband Malaysia
- Hong Kong ISP Association (HKISPA)
- Hong Kong IX (HKIX)
- ID-SIRTII Indonesia

- IEIE
- intERLab – AIT, Thailand
- International Training Institute (ITI) – PNG
- Internet NZ
- INTI College Subang Jaya
- IPv6 Forum
- ISOC Hong Kong
- ISP Association of Bangladesh (ISPABD)
- ISP Association of India (ISPAI)
- IT&E Guam
- MekongNet Cambodia
- MTNL – India
- My Directory Sdn Bhd
- Myanma Computer Company (MCC)
- Myanmar Computer Federation (MCF)
- Myanmar Post & Telecommunication (MPT)
- National Internet Exchange of India (NIXI)
- National University of Laos (NUOL)
- Networkers Society of Pakistan (NSP)
- NTT Communications
- Pacific Island Telecommunications Association (PITA)
- Perridot Systems
- Republic Polytechnic (RP) Singapore
- Taiwan Network Information Centre (TWNIC)
- Telecommunication Engineering Centre (TEC) – India

Operations

- HKIX – for hosting Hong Kong co-location facility
- Nominum – for subsidized software
- Reach – for providing transit for Hong Kong co-location facility
- Telstra – for transit
- Vocus Communications for native IPv6 transit
- WIDE Project – for hosting and transit for the Japan co-location facility

Root server projects

- ISC – maintaining F-root servers
- Ripe-NCC – maintaining K-root servers

ISIF supporters

- DotAsia
- Internet Society (ISOC)
- The International Development Research Centre (IDRC)

APNIC

Addressing the challenge of responsible Internet resource distribution in the Asia Pacific region

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