APNIC

Apster 30

Apster is the twice-yearly newsletter for the APNIC membership and community.

August 2010

Addressing Resource Quality

APNIC recognizes that as the IANA pool of unallocated IPv4 addresses nears exhaustion, there may be increasing community concern about the quality of the new address blocks made available for distribution.

APNIC Services Director, Sanjaya, explains that every region faces potential routing problems with addresses from the "bottom of the IPv4 barrel".

"The end of the IPv4 pool might not be as 'clean' as the blocks that were distributed earlier, but we have to address this problem in a collaborative way," he said.

As APNIC found out when it was allocated 1.0.0.0/8 for distribution, some of the remaining address blocks are well known to be affected by higher levels of unwanted traffic. While in the past these packets from and to these addresses could safely be filtered out, as legitimate users begin using these blocks they could be disadvantaged by large volumes of "dark" traffic or have their legitimate traffic blocked by the packet and routing filters deployed by other networks.

"Network operators, Internet Registries, and end users must all work together to combat those who are abusing IP addresses and support those who are using them properly," Sanjaya said.

The Resource Quality Assurance (RQA) program is an APNIC activity designed to tackle the problems associated with these issues. RQA is a combination of extensive testing and an education program encouraging responsible filtering, along with providing the necessary tools and knowledge to investigate traffic blockages.

"Together, we can deal with these situations and support each other during the final months of IPv4 distribution," said Sanjaya.

The filters network operators use to ensure "dirty" packets and spam don't enter their networks need constant updates and maintenance to ensure legitimate traffic is routed and bad traffic is blocked.

As filtering occurs at the network level, Regional Internet Registries like APNIC have no control and so the community relies on operators to filter responsibly, explained Sanjaya. "IP addresses themselves are neutral and can be redelegated. So it is not good practice to permanently block them," he said.

An important part of the program is the reachability research undertaken by the APNIC Research and Development team, led by Chief Scientist Geoff Huston. Each new address block from IANA is tested before allocation. APNIC then notifies security firms the block is now being used legitimately and network operators are encouraged to perform regular filter updates with the current information.

When addresses are assigned or allocated, the resource holder should determine the reachability for individual addresses before reporting problems, so that the respective RIR can assist.

For the latest updates on APNIC's RQA program visit,

http://www.apnic.net/rqa

Reachability Testing

Maybe all Addresses are No Longer the Same

The Internet's address distribution framework started with the assumption that one address is much the same as any other. One address was as good as the next, so they were typically delegated in sequential order. Now we are asking, "are they all really the same?"

In recent months, APNIC has been looking at this question. In particular, our area of study is to look at the "dark" traffic in previously unallocated address blocks.

The test bed for this work is a "black hole" experiment where Internet traffic can freely enter the experimental setup. All received packets are recorded, but the setup generates no packets in response.

So far APNIC has used this setup to test a number of address blocks that have been allocated to APNIC in recent months, including 1.0.0.0/8, 14.0.0.0/8, and 223.0.0.0/8. APNIC R&D has also just completed a study on the IPv6 space, testing the address space in 2400::/12 using the same technique.

A Trio of Troubles

There are three main causes of unwanted traffic on these previously unused address blocks. As well as the direct probing into these "dark" address ranges, there is a second set of packets which are commonly known as "back scatter".

In this scenario, a system sends a packet to a server. Except the packet lies about its own source address and uses an arbitrary address selected from a dark address range. If the server responds to the packet, it will respond by sending a packet into the dark address range. Presumably, the technique is being used in an attempt to hide the true identity of an attacker.

A third class of such dark traffic is a result of leakage from private use contexts. In theory, a private network should be constrained to use only those address blocks defined in RFC 1918, namely addresses in the ranges 10.0.0.0/8, 172.16.0.0/12, and 192.168.0.0/16. However, there are many instances where equipment has been configured with private use addresses drawn from other address blocks.

The most prolific example of such appropriation of public addresses into private use is the address 1.1.1.1. APINC's research has found a sustained rate in excess of 79Mbps of traffic inappropriately directed to this single address.

Hot Addresses

Typically, it appears that within any address block there are a small number of "hot addresses" which attract a large amount of unwanted traffic. The rest attract a far lower level of background scanning traffic.

The reachability testing conducted on a number of IPv4 address blocks reveals that the "normal" level of dark traffic in the Internet averages 20kbps per /16 – or the equivalent of a single incoming packet per address every 50 minutes.

Individually, that does not appear to be so bad, but looking at the IPv4 network as a whole gives a different perspective. The testing suggests we are now at the point where there is in excess of 2Gbps of various forms of probing and scanning traffic across the entire IPv4 network.

Dark traffic tests conducted in the IPv6 address space during June 2010 shows radically different results. The amount of traffic that "leaks" into the dark IPv6 address space is extremely low in comparison to the IPv4 Internet.

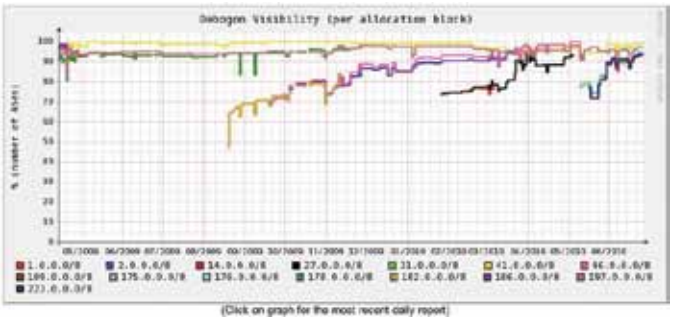
Most of this traffic is attributable to accidental leakage from private networks back into the public network. Filtering out this private use leakage gives an extremely different picture, with an average of just 2 packets per minute detected across an entire /12 of IPv6 address space!

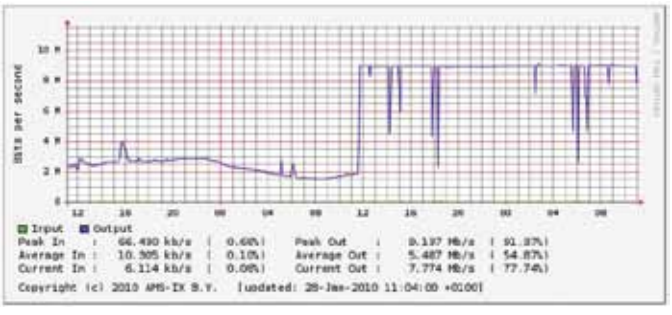
There is no evidence of the same continual sweep of probes and scans that are apparent in IPv4.

Further Research

We are now in a better position to answer this question about whether all addresses are the same, and the answer is perhaps best expressed as "mostly the same". In IPv4 we should qualify this to say, "but with some quite notable exceptions".

We would like to study these exceptions in further detail to see if there are any approaches that could mitigate this abnormal flow of traffic. For the moment, APNIC is holding a small number of address blocks in 1.0.0.0/8, 14.0.0.0/8 and 223.0.0.0/8 aside for further testing, while the remainder of the space is being distributed as normal.





Reports on these dark traffic experiments are available from, http://www.apnic.net/rqa

Dear Reader,

This latest edition of Apster coincides with our bi-annual Open Policy Meeting, being held on the Gold Coast, Australia. The road to APNIC 30 has been a little rough, and so it is with mixed emotions that we welcome those who have made the journey to this event.

In May this year, after a great deal of consideration, the APNIC Executive Council made the difficult decision to change the APNIC 30 meeting venue. We thank TOT for their offer to hold this meeting in Bangkok and for their great support and efforts in preparation for the event. Unfortunately, local circumstances forced a change, with APNIC itself hosting the current meeting at the Gold Coast, Australia.

However, our colleagues at TOT have graciously provided sponsorship and support for a "Remote Hub" which is allowing locals in Bangkok to still make the most of APNIC 30. The second remote participation site is located in Hong Kong, which happens to also be the venue for APNIC 31 and APRICOT 2011 in the New Year.

While welcoming all delegates attending the Gold Coast, I extend special greetings to the 10 Fellows who are joining us from 9 different developing economies of the region. APNIC has improved the Fellowship program for this event with an increased sponsor package that includes a contribution to air fares as well as general expenses.

This 30th edition of Apster details some of the exciting achievements and developments the Secretariat has made for the benefit of our Members, most of which will also be reported during APNIC 30.

These include the launch of our eLearning Interactive program, the deployment of DNSSEC, advances in the IPv6 Program, the upgrade of our Resource Quality Assurance processes, service improvements as a result of the High Availability project, and the extension of the Helpdesk service to 12 hours per day.

In the near future, you will see APNIC is planning to follow-up the successful "IANA 10%" campaign with a final 5% update, raising the IPv4 exhaustion message in the regional and global media.

Also coming up soon is the launch of our next Member and Stakeholder Survey, which provides the primary guidance to APNIC in developing and improving our services. The 2011 Survey will provide you with the opportunity to comment on the current and future operations of APNIC and I sincerely hope that you will take the time to participate.

Whether you are reading this as our guest at APNIC 30; or at another time, in another place, I do hope you enjoy this latest edition of Apster.

Paul Wilson
Director General

Increased hours for the APNIC Helpdesk

APNIC has extended its Helpdesk hours for the benefit of our Members, particularly those in the high-growth South Asian region. The APNIC Member Services Helpdesk is now open from 09:00 to 21:00 (UTC +10) and gives APNIC Members and stakeholders direct access to enquiry assistance.

Helpdesk staff are available via live chat, email, and phone and offer support in Bahasa Indonesia, Bengali, Cantonese, English, Filipino (Tagalog), Hindi, Mandarin, and Thai.

APNIC Helpdesk

APNIC Helpdesk Hours Extended.
Now Open through to 21:00 (UTC+10 Hours).

Push to IPv6 Gains Momentum

It is amazing how much difference a year can make. Around the world and in the Asia Pacific the rate of IPv6 uptake is robust. Allocations are increasing rapidly and growing IPv6 advertisements in the BGP Table (Boundary Gateway Protocol) show the IPv6 Internet is being quickly deployed ahead of the expected IPv4 free pool run out in around one year from now.

If the recent data is a good indication, we should expect to see exponential growth in IPv6 delegations in the next few years.

This year is also proving to be a busy year for APNIC's IPv6 Program. Several new initiatives and outreach opportunities, new responsibilities, and plans for future activities mean APNIC is proactively generating interest and knowledge of IPv6 with Members and stakeholders – especially in Government.

APNIC represents the Asia Pacific Internet community at global and regional IPv6 summits, and our Senior IPv6 Program Specialist, Miwa Fujii, presents the latest developments to stakeholders across our region and beyond. This update includes some of the highlights of 2010's IPv6 activities.

New APNIC Responsibilities

During APNIC 29 / APRICOT 2010 in Kuala Lumpur last February, APNIC was chosen to serve as the Secretariat for the Asia Pacific IPv6 Task Force (APIPv6TF). ISOC-AU President, Tony Hill, generously offered to chair the Task Force, and we deeply appreciate this contribution.

This collaboration is giving our IPv6 Program another avenue to cultivate a proactive multi-stakeholder approach in the global transition to IPv6. APNIC is looking forward to serving the Asia Pacific Internet community by managing this important group during a critical phase of the global transition to IPv6.

Cooperation among Members in different economies across the Asia Pacific and beyond is the key to managing the challenges that IPv4 address exhaustion presents. In order to bring Members together across such large distances APNIC is emphasizing the importance of remote participation. At the last APIPv6TF gathering in Bali, 35% of participants were using a remote participation tool, Webex, to join the discussion.

APNIC is investing time and effort in to exploring other remote participation options as well, to enable as much involvement among Members as possible.

The most recent gathering of the APIPv6TF organized by APNIC was held in Bali in conjunction with the Indonesia IPv6 Summit. Attendance was high with 39 total attendees.

The next APIPv6TF gathering on the 26 August on the Gold Coast, Australia will take advantage of webcasts allowing those not attending the APNIC 30 Meeting to join us for updates from the Asia Pacific on IPv6 deployment status!

Ministerial Call to Action

APNIC supported the Infrastructure Development Steering Group (DSG) at APECTEL 41 in May this year by delivering a full-day IPv6 workshop. This workshop, titled "IPv6 Transforming the Internet", the second APNIC has been involved with at an APEC TEL conference, was designed according to the outcomes and feedback from a workshop given at APEC TEL 40 in September 2009.

The event was a great success with a report on the workshop submitted by the United States Government describing it as "the best attended workshop of the day, a confirmation of the importance of the issue to the economies of the region."

During the workshop, participants generally agreed that the APECTELMIN8 ministerial statement should include a call to action among all APEC economies. As part of the recognition for global IPv6 adoption, this year's participants also acknowledged the TELMIN8 statement should tie in the 2015 broadband penetration goal to IPv6 uptake.

The goal to reach a certain broadband penetration rate across 21 Asia Pacific economies by 2015 would not be possible without the widespread adoption of IPv6, said Ms Fujii.

"IPv6 is a prerequisite for the successful deployment of many socioeconomic innovations, such as energy management, conservation, e-health, and effective emergency response, which will enhance the lives of millions of people.

APNIC IPv6 Program

"These exciting developments will all depend on universal accessibility to broadband in each economy," she said.

The APEC Member economies are determined to lead the global Internet industry by example by adopting IPv6.

Kickstart IPv6 Kickstarts

Network operators in the Asia Pacific region are well on their way to realizing APEC's goal to lead the global Internet industry by example following a huge take-up of IPv6 allocations following APNIC's introduction of the IPv6 Kickstart program earlier this year.

An impressive 300 new allocations were made under the program in the first 6 months of operation, with APNIC Members in more than 30 economies taking advantage of the "one click" delegation process.

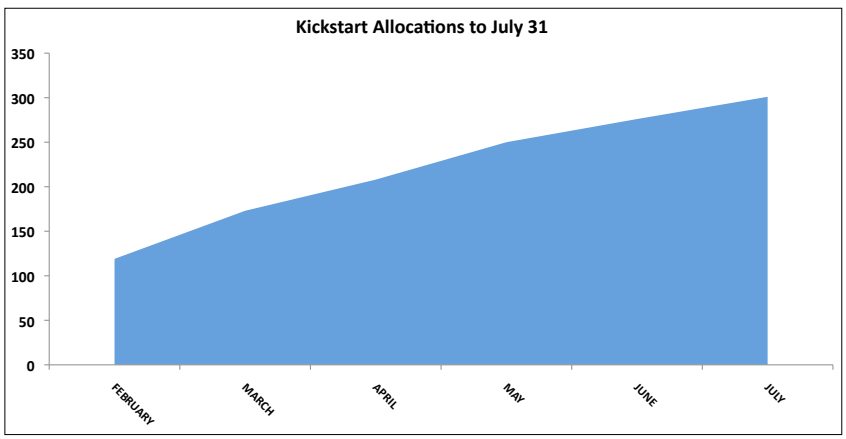
Following this incredible success, APNIC Member Services is responding to the needs of new Members by introducing a similar process for new ISPs and multihoming networks that want to get started on their IPv6 deployments without delay.

APNIC has introduced new simplified membership processes to simultaneously apply for APNIC membership and an IPv6 allocation or assignment.

Kickstart Corporate is designed for new corporate Members that want an IPv6 assignment to multihome their Internet services to provide layers of redundancy for their network. These corporate Members may include commercial and non-commercial organizations such as hospitals, banks, schools, retailers, or government bodies.

Kickstart Provider is tailored to suit new Members who require an IPv6 allocation for downstream sub-allocation or assignment to clients, including telcos and service providers such as ISPs, hosting providers and data centres.

The great news is that Kickstart is so fast, easy, and efficient APNIC is able to pass considerable cost savings removing the Initial Application Fee for new Members applying for IPv6 address space.



Internet Governance Update

Internet Governance Forum (IGF)

IGF 2010 will be held in Vilnius, Lithuania, 14-17 September 2010. APNIC, as part of the NRO, will be participating in workshops and main sessions at the forum, including "Managing Critical Internet Resources", and the workshop "IPv6 around the World". Following on from the success of the NRO booths at previous IGFs, the NRO will be staffing a booth in the IGF Village in Vilnius. All IGF attendees are welcome to stop by to meet APNIC and other RIR staff and discuss Internet addressing issues.

In addition, APNIC will be co-hosting remote hubs (Dhaka, Jakarta, Manila and Hong King) in the Asia Pacific region to facilitate more participation from the Asia Pacific in Internet Governance discussions. Remote hubs allow small groups of people around the world to watch webcasts together and have discussions locally that can then be fed into the main IGF event in Vilnius. For more information on the IGF and a link to remote hubs available during the Vilnius meeting, see:

http://www.intgovforum.org

Beyond Vilnius

This year, 2010, is the final year in the five-year mandate given to the IGF. In May 2010, the UN Secretary General issued a report recommending the IGF mandate be extended and enhanced until 2015. Based on this report, and interim UN processes, the United Nations Assembly will make a decision on the future of the IGF in December 2010.

Asia Pacific regional Internet Governance Forum (APrIGF)

The first Asia Pacific regional Internet Governance Forum was held on 14-16 June 2010 in Hong Kong. While the global IGF is already in its fifth and final year of its initial charter, and Regional IGFs have been established in many other regions, including Africa, Europe, Latin America and the Caribbean, 2010 was the first year a region IGF was held in the Asia Pacific region. The APrIGF aimed to raise awareness and encourage participation from relevant stakeholders around the region on Internet governance issues. The forum also aimed to foster multi-lateral, multi-stakeholder discussion about issues pertinent to the Internet in Asia.

IP address discussions

Of particular interest to the APNIC community was the discussion on IPv4 exhaustion and the transition to IPv6 in the Managing Critical Internet Resources session. Some of the interesting facts that came out of the session included:

- In Japan, more people are seeing NAT (Network Address Translation) as a solution to IPv4 exhaustion, with the percentage of people favouring this option up from 40% to 49% (from JPNIC survey results).
- In Indonesia, there is a plan to have all large ISPs IPv6-ready by the end of 2010, with all small ISPs to be IPv6-ready by the end of 2011.
- In Malaysia, it has taken the .my registry two years from an initial idea to reach close to full IPv6 compliance. However, with only about 200 .my domains currently IPv6 enabled, the registry is hoping to encourage further deployment by using an upcoming website competition that assigns bonuses to IPv6-enabled websites.
- About half of APTLD's Members have already deployed IPv6, with the remaining APTLD Members planning for IPv6.
- The .nz registry maintains a web page that lists IPv6-enabled registrars that offer IPv6 services.

Paul Wilson explained to APrIGF participants that IPv6 allocation and IPv6 deployment were separate issues. While the RIR communities had worked to develop policy to enable equitable IPv6 distribution, the deployment of IPv6 was an issue for a much wider group of stakeholders at the edges, including ISPs, vendors and Internet users. He explained that IPv6 was no longer experimental, but was in commercial use, with accelerating deployment of IPv6 being seen during the past year.

There was discussion about what options there were available to assist with capacity building for IPv6 deployment in developing economies. Options discussed that are already available included awareness raising and training via NIRs and RIRs, and bottom-up capacity building available through other Internet technical bodies, such as InternetNZ.

Transcripts from APrIGF are available from:

http://rigf.asia

After the inaugural APrIGF

In the wrapping up session of the first APrIGF, a few economies expressed interest in holding future APrIGFs or national IGFs. As Markus Kummer, IGF Secretariat, explained, regional, sub-regional, and national IGFs are developed in an organic, bottom-up process and follow the global IGF format, but are independent of the global IGF itself. Therefore, it is likely that future regional IGFs will be held in the Asia Pacific region, whether or not the United Nations extends the mandate for the global IGF.

Internet discussions in the intergovernmental world

As the Internet continues to grow in importance, more and more stakeholders are becoming more active

participants in Internet governance discussions. Governments are part of this process and increasingly are participating more actively in open, transparent forums such as the IGF, the RIRs, and ICANN. At the same time, governments have been participating in discussions at an intergovernmental level that include IPv6 and other Internet related issues.

How can you help?

To ensure the Internet industry's interests and points of view are reflected, contact your local government officials involved in Internet matters and let them know that they need to be involved in Internet governance discussions.

PITA 14th AGM, Honiara

APNIC Secretariat staff attended the Pacific Islands Telecommunications Association 14th Annual General Meeting (PITA 14th AGM) and Conference, which was held this year in Honiara, Solomon Islands in April. APNIC Director General, Paul Wilson, delivered a keynote address and a presentation of the business case for IPv6 to prominent CEOs in the sub-region.

Despite being relative latecomers in requesting IPv6 allocations, the Pacific Island nations have demonstrated higher IPv6 penetration rates than the original IPv4 adoption rates when the Internet was introduced to these nations during the last two decades.

PITA is an important forum in the Asia Pacific region, as it is the only opportunity for representatives from Pacific Island nations to meet and discuss relevant Internet operation issues. Elly Tawhai, APNIC's Hostmaster for the Pacific, said this year was even more successful than the PITA 13th AGM.

"After we attended the 13th AGM, there were 22 IPv6 delegation requests from Pacific Island nations during the next year. This is a huge number for a small sub-region,

"The five LDCs in the Pacific have the highest rate of IPv6 addresses per capita in the region—this is really encouraging for other developing countries in the Asia Pacific," Elly said.

The Kickstart IPv6 program has enabled these economies to easily access IPv6 resources. Currently, the rate of IPv6 penetration in the Pacific is 60% higher than the rate of IPv4 penetration.

Deployment: The Best Response to Exhaustion

The impending global exhaustion of IPv4 addresses is one of the most important challenges facing the Asia Pacific Internet community today.

APNIC is dedicated to responsibly managing and distributing critical Internet resources during this final run-out period. During this period, it is important to ensure the distribution of IP addresses remains fair and equitable.

While Community Consultations, like the APNIC 30 plenary "IPv4 Tomorrow?", can provide input into the finer details of address management, the criteria and process for obtaining IPv4 addresses has not changed and any business requiring additional addresses will receive them – while they are available.

However, it is important for service providers, vendors, and suppliers to assess their needs in terms of equipment and training that will be required for the IPv6 transition. Eventually, the global pool of IPv4 addresses will run out and soon after, there will be no more IPv4 available for distribution.

APNIC Chief Scientist, Geoff Huston, has projected the IANA pool of IPv4 addresses will run out in less than 12 months. APNIC is likely to be the first RIR to exhaust its regional pool, sometime in January 2012.

"These are only statistical projections, based on observed behaviour, which implies a degree of uncertainty. It's interesting to note that less than 1 per cent of all individual address allocations across the world have consumed 50 per cent of all allocated IPv4 addresses," Mr Huston said.

The date of Mr Huston's projected exhaustion, on www.potaroo.net, changes daily and there is no way to know which provider will take the last delegation of IPv4 addresses from the APNIC pool.

"As the future always carries a degree of uncertainty, ISPs, vendors, and suppliers must deal with the present. We don't need to concern ourselves with various models of address exhaustion, but we do need to get focused on deploying IPv6 across the region now," Mr Huston said.

Exhaustion campaign attracts worldwide attention

Following the success of the IANA 10% press campaign, conducted by APNIC and the NRO earlier this year, plans are already in place to continue the IPv4 countdown with a similar media campaign to notify stakeholders when the IANA free pool reaches the last 5% of addresses.

The 10% campaign attracted a great deal of global media attention, giving an opportunity to raise awareness of IPv4 exhaustion to people outside the Internet community.

The 5% campaign is scheduled to kick off when the next IANA allocation is made later this year. There are currently 14 /8s left in the free pool. APNIC Director General, Paul Wilson, said that there is still IPv4 address space for those who still need it.

This event will mark a major milestone in IPv4 exhaustion, but the Asia Pacific region will be ready for IPv6 when the IANA free pool is depleted.

"Many networks within the Asia Pacific region have taken steps towards IPv6 deployment, putting them in a good position for the transition period," Mr Wilson said.

APNIC promotes the responsible management of all critical Internet resources. Each block of addresses allocated to APNIC from the IANA is subjected to rigorous testing before distribution among Members.

On 6 August 2010, APNIC received two /8 IPv4 blocks from IANA, bringing to total pool down to 14 blocks. Despite the current status of global IPv4 exhaustion, APNIC policies with regard to allocating IPv4 addresses to Members mandate the fair and equitable distribution of these resources.

As we reach the point of total IPv4 exhaustion, it is necessary to discuss these policies and their finer details. An update from the APNIC 30 Plenary: IPv4 Tomorrow? will be available soon.

http://meetings.apnic.net/program/plenary

Policy Change to Make Abuse Contact Mandatory

Currently, all reports of network abuse activity in the APNIC region are directed to the tech-c or admin-c contacts. With the increase in reports of network abuse and computer security incidents, it is important that such reports be directed to specialized teams such as Incidence Response Teams (IRTs).

IRTs or Computer Security Incidents Response Teams (CSIRTs) specifically respond to computer security incident reports and activity. They are dedicated abuse handling departments, (as distinct from basic operational departments) which review and respond to abuse reports resulting in efficient and accurate resolution of security incidents and activity.

What you need to do

From 8 November 2010, all APNIC account holders must supply contact details of IRTs as part of the implementation of prop-079: Abuse contact information.

APNIC account holders will need to update their IP address and AS number records in the APNIC Whois Database with a mandatory reference to a new IRT object. Specific abuse related fields in inetnum, inet6num, and aut-num objects will need to be updated or created.

Providing your abuse contact information means there are dedicated contacts or teams available to specifically resolve security incidents; you get an efficient and accurate response; and the tech-c and admin-c contacts in your organization stop getting reports of abuse. There is also a much better chance of identification and resolution of abuse activity as more and more IRTs are working together to share response strategies.

APNIC encourages those who manage Internet resources to start preparing their own abuse contacts or find an upstream ISP who is willing to be their contact for abuse reports well before the 8 November 2010 implementation date.

For more, see: http://www.apnic.net/abuse

APNIC Policy Update

On 5 July 2010, APNIC implemented two policy proposals that reached consensus during APNIC 29 in Kuala Lumpur, Malaysia in March 2010. A third proposal, which also reached consensus during APNIC 29, will be implemented on 8 November 2010. The APNIC Executive Council endorsed the proposals during their May 2010 meeting.

The two proposals implemented are:

1. prop-080: Removal of IPv4 prefix exchange policy

This proposal removes the policy that currently permits resource holders to return three or more non-contiguous IPv4 address blocks and have the prefix replaced with a single, larger, contiguous block.

Policy document amended:

- Policies for IPv4 address space management in the Asia Pacific region
- Policies for historical Internet resources in the APNIC Whois Database

2. prop-082: Removing aggregation criteria for IPv6 initial allocations

This proposal removes the aggregation requirement from the IPv6 initial allocation policy.

Policy amended:

- IPv6 address allocation and assignment policy

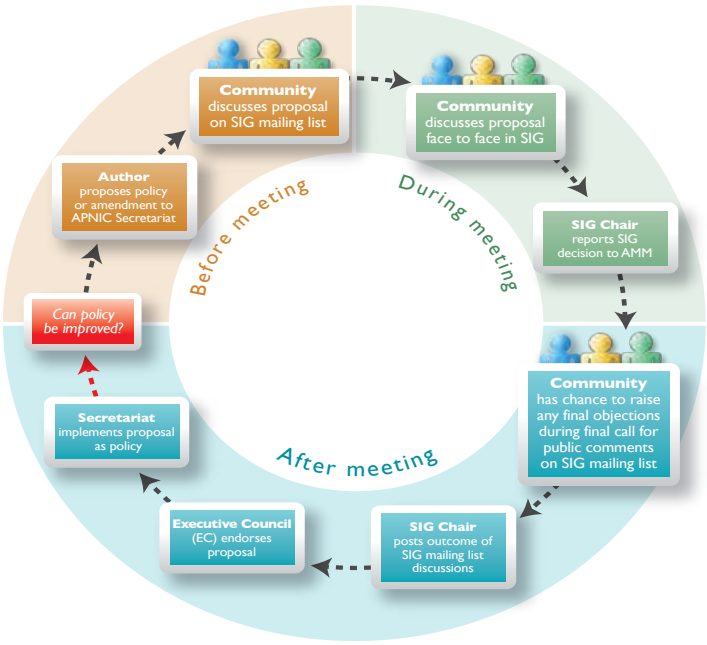
The third proposal to be implemented on 8 November 2010 is:

3. prop-079: Abuse contact information

This proposal introduces a mandatory abuse contact field for objects in the APNIC Whois Database to provide a more efficient way for abuse reports to reach the correct network contact.

For more information on APNIC policy proposals, see:

http://www.apnic.net/policy/proposals



DNSSEC and RPKI Bolster Security

Two major threats to the global Internet are attacks on routing, and attacks on the Domain Name System (DNS). For some time activity has been underway to secure them from harm resulting in the Domain Name System Security Extensions (DNSSEC) and Resource Public Key Infrastructure (RPKI) initiatives. DNSSEC provides protection to the DNS; RPKI provides protection to routing. Both use Public Key Infrastructure (PKI) technology, where complex mathematics is used to provide a private key for signing, and a public key for checking signatures. APNIC has been actively developing systems for resource holders using this technology, and will be releasing new services in 2010 to take advantage of them.

DNSSEC is a worldwide activity to secure the DNS. It provides for the distribution of digital signatures over domain names, anchored at the root. This is intended to provide trust in the namespace, and prevent a significant number of name hijacking attacks that have worried the community for some time.

Major milestone achieved

DNSSEC reached a major milestone in July 2010, with the deployment of the signed root. Previously, the global Internet community had been relying on so-called "set aside" validation paths, to anchor their DNSSEC registrations. These were an ad-hoc method of checking the digital signatures, which depended on the goodwill of a few agencies and a lot of hand-configuration of systems. They were inherently less trustable than a fully signed DNS, and had significant problems in deployment. APNIC conducted research work early in 2010 identifying problems in key management and signature rollover, which were presented at IETF and regional RIR meetings.

Throughout 2010 a rolling deployment of DNSSEC has seen successive instances of the 13 "root" server identities (actually backed by hundreds of nodes) adopt a version of the root-signing key that could not be validated, but was visible for testing. As of 15 July 2010, a publicly checkable signature was added to the root, and over the next few weeks, successive top-level domains such as .org and some economy codes such as .uk will be signed over.

We are now able to validate signed DNSs from the root down, and over coming months successively more domains will be signed over. Of interest to resource holders is the upcoming signing of the reverse-DNS tree.

Managing DNSSEC information

APNIC has been working with the other RIRs and IANA to make its provisioning system (which manages the in-addr.arpa and ip6.arpa sub-spaces for our Internet number resources) capable of managing DNSSEC information. In August we will be releasing code that permits resource holders to upload the "DS" records, which are the signatures associated with their sub-zones under the APNIC address ranges. These will then be signed over by IANA, and provide a validation chain anchored at the root of the DNS. No extra permissions beyond your MyAPNIC login credentials are required, and simple tools available in the ISC "BIND" and NLNET labs "NSC" packages can be used to make the digital signatures.

In order to protect the integrity of the signing process, you must use MyAPNIC to manage DNSSEC information at APNIC. The email path to update whois, for more casual data management, cannot be used for this function. However APNIC does continue to publish a whois record for your DNSSEC signed zone, to give the wider community a non-DNS located check-point of your DNS delegation records.

Digital signatures assure validity

RPKI is a special form of the well-known X.509 public key certificate model, which understands Internet Number Resources. An IETF document, RFC3779, defines how to attach structured lists of Internet Number Resources to a PKI certificate, in a way which can be checked during certificate validation. Because the number resource management mechanisms are inherently "hierarchical" (each resource holder receives resources from somebody who has a larger block) and because PKI certificates are also hierarchical, by aligning the certificate and the resource hierarchy, we can provide a very strong trust statement over every address in deployment.

Additional work has been undertaken to begin securing BGP, the basic Internet routing technology. BGP is now able to take advantage of RPKI signed resources, and check if the routing origin of each prefix matches a publicly signed declaration. Future work will address the problem of securing the sequence of paths which route the prefix. RIPE NCC has been working on extensions to the RPSL definition to make RPKI signatures visible in whois, and other work under DHS grant funding has defined mechanisms to permit RPKI signed data to be flagged to routers, over a secure channel.

APNIC has been actively progressing standards in the IETF along with other RIRs and the wider community. APNIC has also been running a production RPKI signing service connected to MyAPNIC for the last year, and continues to extend this service. The APNIC code was made available to AfriNIC with our ongoing support, as part of the global RIR deployment of RPKI.

Global RPKI co ordination

The NRO has recently formalized a staged deployment plan which will see all RIRs able to sign resources, irrespective of which RIR they vest from, and coordinate exchanges of signatures for resource holders who need to transfer management from one region to another. During 2011, this service will "go live" in a coordinated deployment that establishes a common, global RPKI system.

To use RPKI, MyAPNIC provides an interface for initializing the resource certificates, and signing Route Origin Attestations (ROAs) that bind a resource holder's prefixes to their choice of Origin-AS in BGP. Other signing services are being worked on to make it possible to use RPKI during resource transfers, and for other resource related signing functions.

New Colo improves availability of Member Services

Each year, the APNIC Secretariat makes investments in security, services, and other areas that will add value for Members. The addition of a new colo, or co-location center, represents a significant continuity upgrade to further enhance APNIC's reliability of Member services.

APNIC Technical Director, Byron Ellacott, said the colos create a very secure "triangle architecture, connecting the collocation centers and the Secretariat office.

"The intent is to provide full and independent fail-over for all services we offer to Members; these services must always be available.

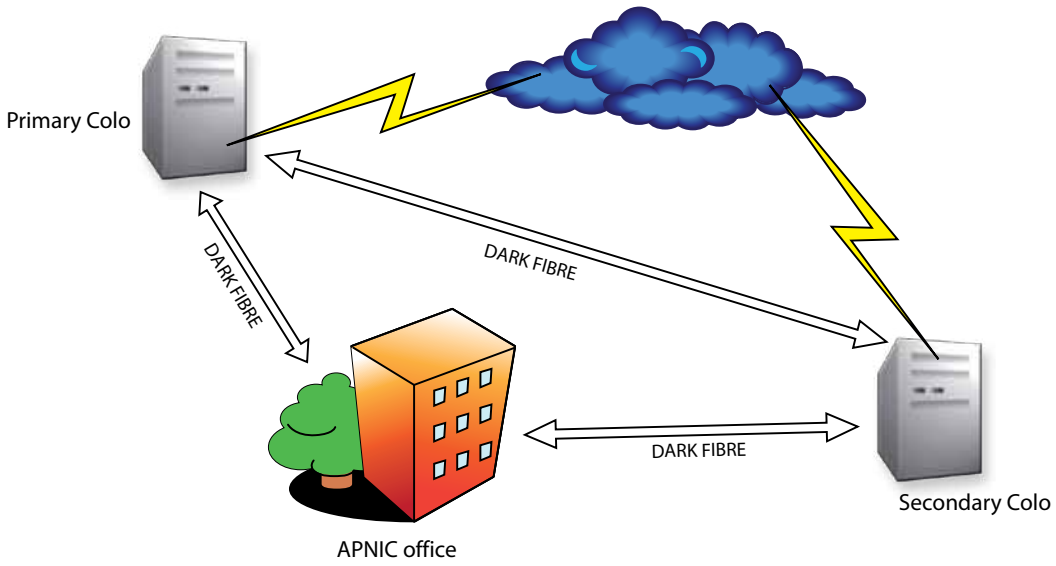
Having multiple data centers protects Members against technical malfunctions, operator or third party physical interruptions, and infrastructure failure," Byron said.

Currently, APNIC stores data on the servers at the Secretariat office, and uses a colo at another location in Brisbane. The additional colo, on a different power grid on the opposite side of the city, will be fully operational in 2011.

APNIC is responsible for the current and accurate registration details of all Internet number resources in the APNIC Whois Database. This information is now kept in three separate places so that Members can access this information at any time, regardless of any sort of technical malfunction or other networking problem.

The triangle architecture provides APNIC Members with a high performance data delivery platform, offering the ultimate level of protection for critical data.

Triangular Co-location Network



Information Society Innovation Fund

Two years supporting innovation in the Asia Pacific Region

The Internet Society Innovation Fund (ISIF) had another successful year, with a record number of 207 project submissions from 25 economies during the 2010 project cycle.

The eight projects selected for 2010 have started their activities early this year. Their proposed ideas emphasize innovation, cooperation, and technical knowledge. The successful grant recipients have the potential to enhance the lives of their communities through innovative solutions, such as improvements in IT infrastructure, access to localized content, targeted training, access to diagnostic tools supporting health provision, showing technical capacity, and social commitment. The projects will be deployed in Timor-Leste, Bhutan, India, Nepal, Sri Lanka and Vietnam.

The full reports from the 2009 grant recipients are available on the ISIF website, published under a Creative Commons license. This license allows others to use, translate, share, and build upon the work non-commercially, as long as they credit the authors and license their new creations under the identical terms.

The reports from the 2009 grant recipients show how the teams from the organizations supported have applied their ingenuity and outstanding commitment to the benefit of the Asia Pacific community and beyond, testing their ideas, producing software and applications to address local needs.

ISIF Project Officer, Sylvia Cadena, is excited about the outcomes of the 2009 funding period. "ISIF grant recipients have been recognized as leaders in their field and are attracting attention from both an ICT and socio-economic perspective," Sylvia said.

The JarokaTele-Healthcare project, a joint collaboration between UM Healthcare, NUST, and APPNA, aims to provide better access to healthcare for rural and destitute communities across the globe. The project won the mBillionth Award's mHealth category, honored for its interactive interfaces, innovative design, aesthetic value, accessibility and most of all its relevance of content and utility value.

During the past month, the ISIF Secretariat has invited all former applicants to participate in an online survey to share their experiences during the application process and have a say about the future of the ISIF program. The findings of this survey will be used during the ISIF Evaluation Process, which has been facilitated by the Developing Evaluation Capacity in ICTD – DECI project.

The ISIF program is looking to expand in 2011, having recently reviewed its partnership and sponsorship strategy.

At this time, organizations and individuals are welcome to support the program through a variety of strategies, which will allow a greater number of projects to be implemented in developing communities across the region each year.

In addition to these projects, ISIF hopes to fund workshops and produce in-depth publications about the operation of the program, and the outcomes of the supported projects among other topics.

ISIF is a small grants initiative established in 2008 to stimulate creative solutions to various ICT development needs across the Asia Pacific. The program is a partnership between APNIC, the Canadian International Development Research Centre (IDRC), and the Internet Society (ISOC), with generous support received from the dotAsia domain registry.

For more information on how to support ICT innovation in the Asia Pacific, contact the ISIF Secretariat.

info@isif.asia

www.isif.asia

APNIC eLearning Interactive

Flexible, Accessible, Free

APNIC is proud to announce the successful implementation of eLearning Interactive.

After successful and popular trails in 2009, APNIC Training have established a schedule offering regular bi-monthly sessions.

http://www.apnic.net/events/calendar/2010

eLearning sessions are offered on a sub-regional basis to participants in South East and Eastern Asia; Pacific and Oceania; and South Asia and are based on sub-regional time zones.. Preference is given to registrants from the participating sub-region.

eLearning was developed based on APNIC Community Member feedback. It provides flexible, free, and accessible training on the fundamental aspects of the Internet. It is an easy way for network engineers to develop their skills and for technical managers to train their staff.

APNIC's skilled Trainers provide live interactive sessions allowing participants to work together, ask questions, and provide feedback.

Courses offered include IPv6, IRM (Internet Resource Management), DNS, IRR (Internet Routing Registry), and Routing. Courses are free of charge, but note, demand for registration is high.

If you have any questions, contact:

training@apnic.net

Staff Updates

Pablo Hinojosa, Senior Public Affairs Advisor

Pablo has recently relocated from the United States to take up the role of Senior Public Affairs Advisor, working closely with the Director General, and engaging with governmental and community bodies across the region. He has a relevant background in similar roles within the Internet industry, and is well known and respected within the broader community. APNIC looks forward to his contributions in this role.

Emma Powney, Graphic Designer

Emma is an experienced graphic designer who will be stepping into Chiaki Kanno's role while Chiaki takes parental leave. Emma has worked both locally and overseas and brings a variety of experience to APNIC's Publications team.

Brenda Scott, Office Assistant

Brenda joined the Office team and is responsible for APNIC's reception and office administration duties. Her business skills and helpful manner enable her to provide assistance both internally to staff and externally to Member queries.

Tom Do, Internet Resource Analyst

Tom has joined the Member Services team, and brings with him experience from a call centre environment, as well as a Vietnamese background. He also has an interest in, and flair for improving documentation and procedures, which will further enhance our services in this area.

Rizky Lirboyo, Research Assistant

Rizky has been working on a contracting basis for APNIC, on the Resource Quality Assurance project, enabling him to put his technical knowledge to good use. He has an Indonesian background so is a great addition to our cultural mix.

Thanks for 11 Years of Service

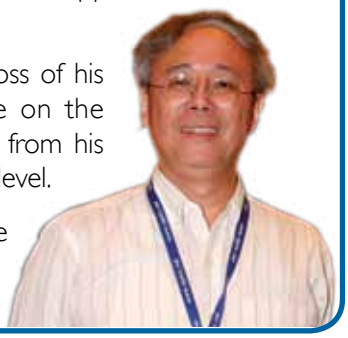
The APNIC Secretariat and the Chair of the Executive Council, (EC) Akinori Maemura, warmly thank Kuo-Wei Wu for his generous support and long-standing service to APNIC.

Kuo-Wei Wu was a long-serving Member of the APNIC EC for more than 10 years after being first elected in March 1999. Due to commitments associated with his recent appointment to the Internet Corporation for Assigned Names and Numbers (ICANN) Board of Directors, Kuo-Wei Wu has tendered his resignation from the APNIC EC.

At the May 2010 EC meeting, the Council Members unanimously adopted a vote of thanks to Kuo-Wei Wu for his support of APNIC during this time, and wished him well in his term of office on ICANN's Board of Directors.

His contributions as an EC Member, and as EC Treasurer from March 2003 to March 2010, have been greatly appreciated by the entire APNIC community.

He earned a great deal of respect among his EC colleagues and the wider community leading to his appointment as APNIC EC Treasurer in March 2003 and ultimately to his latest esteemed appointment to serve on the ICANN Board.



The region will regret the loss of his leadership and experience on the APNIC EC, but will benefit from his representation at this global level.

We wish him well in the future.

New Member Survey Starts Soon

APNIC feels strongly about continuously improving the services and activities it provides to Members and the community as a whole. To keep up with the dynamic changes in the Internet industry and to ensure Member's needs are met, the Member and Stakeholder Survey checks on the community's expectations of APNIC every two years.

Responding to this survey is an important way for Members to have their say about how APNIC operational plans and budget are developed. The survey helps APNIC management determine the ongoing activity plan which leads to the development of a yearly operational plan and the annual Budget.

The 2010 Operational Plan was developed from this criteria and resulted in four key priorities:

- Delivering Value
- Supporting Internet Development
- Collaborating and Communicating
- Corporate Support

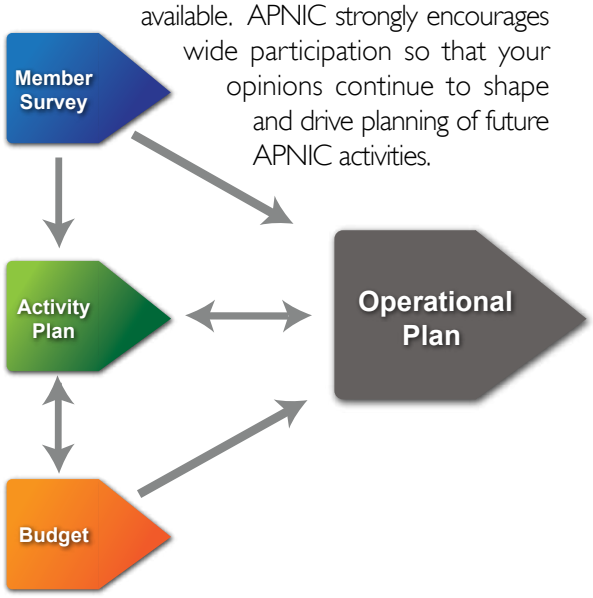
Delivering Value focuses on providing value to Members according to their specific needs. In the last survey Members asked APNIC to concentrate on supporting IPv6 distribution and deployment through promotion of IPv6 resource services, IPv6 training, and through resource management systems and procedures. This resulted in the launch of initiatives such as the IPv6 Program and Kickstart IPv6.

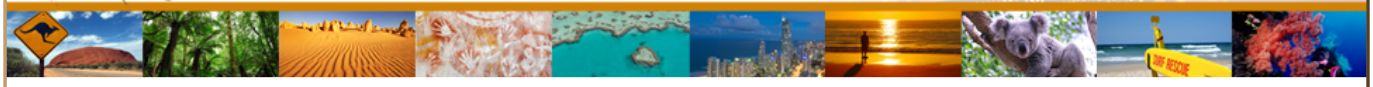
Supporting Internet Development promotes the development and maintenance of an open and neutral Internet. Priorities in 2010 included encouraging increased IPv6 uptake and actively participating in Internet Governance activities such as the first regional IGF in Hong Kong.

Through Collaboration and Communication, APNIC works with other stakeholders cooperatively within the global Internet community. A dedicated Public Affairs function, and strengthened NRO, ICANN, and NIR relationships facilitate this.

APNIC's Corporate Support priority focuses on providing efficient and accountable services that support APNIC operations. Key priorities in 2010 included reducing ongoing operational costs through the acquisition of APNIC's own premises and continuously improving and enhancing APNIC's internal systems.

The 2011 Member and Stakeholder Survey will soon be available. APNIC strongly encourages wide participation so that your opinions continue to shape and drive planning of future APNIC activities.





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APNIC Meeting Sponsorship reduces delegate participation costs and enables the widest range of Members to attend these important events.

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How to contact APNIC

Office location
Level 1, 33 Park Road, Milton, Brisbane QLD 4064 Australia

Postal address
PO Box 2131, Milton, Brisbane QLD 4064 Australia

Phone
+61 7 3858 3100

Fax
+61 7 3858 3199

Email
info@apnic.net

VoIP
helpdesk@voip.apnic.net

MyAPNIC

Are you using MyAPNIC?

APNIC Members can use MyAPNIC to:

- View APNIC resources held by their organization
- Monitor the amount of address space assigned to customers
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- View current tickets open in the APNIC email ticketing system
- View staff attendance at APNIC Training and Meetings
- Vote online

For more information on MyAPNIC's features, see:

www.apnic.net/services/myapnic

APNIC Helpdesk

+61 7 3858 3188

Helpdesk@apnic.net

Helpdesk Languages

Bahasa Indonesia, Bengali, Cantonese, English, Filipino (Tagalog), Hindi, Mandarin, Thai

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