APNIC

Apster

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

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The Internet in Australia

With its long distances and relatively sparse population, Australia has posed many challenges to Internet development over the past 30 years. Over that time these challenges have been met and overcome, as the country has embraced Internet technologies and established a strong and growing industry, with more than 6 million subscribers from a total population of barely 20 million.

Early days

As with many other countries in the Asia Pacific region, Internet growth in Australia was initially driven by the education sector, starting in the mid 70s with Australian researchers making sporadic connections to the US-based ARPANET via dial-up connections. Various Australian universities (including the Universities of Melbourne, Wollongong, and Sydney) were also exchanging files across networks such as the Australian Computer Science network (ACSnet), which APNIC Senior Technical Officer George Michaelson recalls was a "dial-up modem based network that connected into the pre-Internet global mail community via gateways to UUCP and other protocols." [Clarke, 2004]

A major step for the Internet development in Australia came in 1989 with the AARNet initiative. AARNet (Australia's Academic and Research Network) was established by a number of Australian universities and the CSIRO (Commonwealth Scientific and Industrial Research Organisation), under the umbrella of the Australian Vice-Chancellors' Committee (AVCC), and during its first few years of operation around 99% of its traffic was to these founding members.

In addition to providing connectivity for the educational sector, AARNet also established itself as a "wholesale backbone Internet Service Provider" [www.aarnet.edu.au/about/history], providing connectivity to a number of smaller, private ISPs. Beginning in 1992 with two private ISPs, the number had grown to over 300 by June 1995, with private customers making up more than 20 percent of the total AARNet traffic. Companies affiliated with AARNet included connect.com, OzEmail, and iinet Technologies.

At around the same time as AARNet was going online, Pegasus Networks, the first private Australian ISP was also being established. Paul Wilson, currently APNIC's Director General, was a founding staff member of Pegasus, and served for eight years as Technical Director and then CEO, during which time Pegasus grew to become one of the top three ISPs in Australia. While bought out by larger companies in the late 90s (eventually becoming part of OptusNet), Pegasus was a vital early provider in the Australian Internet industry, providing early connectivity to institutions including the Australian Broadcasting Corporation.

In 1993, Internet researcher Geoff Huston (currently Internet Research Scientist with APNIC) applied for a large block of address space from the IANA, with the goal of setting up a national IP registry. The result was AUNIC, which operated from 1993 until 1997, providing a valuable service to the Australian Internet community. In 2001, all address records from the AUNIC database were finally migrated across to the APNIC Whois Database.

Growth and commercialisation

It is generally held that prior to 1995 there was minimal (or at least minimally visible) interest from Australia's largest telecommunications companies in the emerging Internet technologies. This was to change very rapidly, however, most notably with the purchase of AARNet's commercial customer base by the government-owned Telstra Corporation in 1995. Roger Clarke, in his article *Origins and Nature of the Internet in Australia*, writes that:

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21st APNIC Open Policy Meeting
27 February - 3 March 2006 Perth - AUSTRALIA

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APNIC Secretariat, Brisbane, Australia

The APNIC Secretariat is based in Brisbane, capital city of the state of Queensland, and Australia's third largest city, with a population of just under 2 million. APNIC was originally established in Tokyo in 1993 as a pilot project of the Asia Pacific Networking Group, but the APNIC Secretariat was moved to Brisbane in 1998 as a means of reducing operating costs and complexity. The APNIC 10 meeting in 2000 was also held in Brisbane.

For more information on Brisbane, see

http://www.ourbrisbane.com/living/brisbanelife

This was variously regarded as the salvation of the Internet in Australia, a commercially realistic negotiation, a necessary transition, a give-away by the AVCC, a sell-out by the AVCC, and/or a naked grab by Telstra for commercial control of the Internet in Australia. [Clarke 2004]

Regardless of various observers' opinions on the deal, it meant that Telstra had effectively "acquired the whole of the infrastructure that at that stage constituted 'the Internet in Australia'" [Clarke 2004]. Telstra rebranded its Internet services as Telstra BigPond in 1997, and BigPond remains the largest ISP in Australia, with a marketshare in late 2004 of around 40 percent.

This is not to say, however, that Telstra was without major competition. Optus (initially set up following the sale of the Aussat satellite system in 1991, later merged to form Cable & Wireless Optus, and eventually bought by SingTel in 2000) had developed as the main competitor to Telstra, and in 1998 introduced a dial-up Internet service under the Optusnet banner. Using both its own telecommunications infrastructure, as well as reselling access to Telstra's ubiquitous network, Optusnet currently has more than 800,000 customers through broadband, dial-up, or satellite connections. Optus also entered into an agreement with the AVCC to assist in the development and deployment of AARNet2 in 1997.

The second half of the decade obviously saw an explosion in the demand for international bandwidth, which was met by Telstra releasing additional capacity on its network, and several of the larger ISPs establishing their own international connections. By the end of the 90s there were approximately 600 independent ISPs operating in Australia. [Clarke 2004]

Recent history

In some respects, the Australian Internet industry appears to have stabilised over the past few years. The number of ISPs appears to have settled around the 600-700 mark (there were 689 ISPs operating as of March 2005), with both Telstra BigPond and Optusnet firmly entrenched in their positions as number one and two players respectively (though there have been some strong competitors emerge over recent years). The most recent statistics available place the total number of Internet subscribers at 5.98 million (March 2005), and Australia currently ranks number 15 in the world in terms of Internet usage per capita.

Internet infrastructure in Australia continues to keep pace with international standards and developments. AARNet is currently in the midst of deploying its next generation network, AARNet3, which will "provide high speed access across the country based on STM-64c (10Gbps) circuits" [www.aarnet.edu.au/engineering/aarnet3]. AARNet is also heavily involved in the GrangeNet project, a "high performance research network that provides the enabling technology for the development of grid and advanced communications services." [www.grangenet.net]

At the same time, however, there are concerns that there are still regions and communities who are not receiving adequate access to Internet access, particularly broadband services. This is especially true beyond the coastal cities, where communication services have been a significant issue in national discussions regarding government plans to privatise Telstra. Aside from these issues, however, the future for Internet development and deployment within Australia is looking bright.

- Chris Buckridge

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APNIC 21 Open Policy Meeting

APNIC invites you to attend the 21st APNIC Open Policy Meeting (APNIC 21) held in conjunction with APRICOT 2006.

27 February - 3 March 2006

Perth Convention and Exhibition Centre (PCEC)

Perth, Australia

Policy proposals at APNIC 21

prop-032-v001: 4-byte AS number
Presented by Geoff Huston

Summary: The proposal details a set of actions and associated dates for RIR AS number allocation policies to assist in an orderly transition to use of the 4-byte AS number space.

http://www.apnic.net/docs/policy/discussions/prop-032-v001.txt

Live features at APNIC meetings

Follow the events at APNIC open policy meetings in real time whether onsite at the meeting, or watching remotely from anywhere in the world. The following live features available online give you the chance to participate in APNIC meetings in near real time:

Live transcripts

Live transcripts of selected sessions available via Jabber and web browsers. Text files of the transcripts are available on the website within a day of being transcribed.

Jabber chat

Jabber chat rooms give people around the world the chance to participate in meeting sessions in near real time. With Jabber, you can:

1. Follow live transcripts of most meeting sessions
2. Discuss issues with others in the chat room
3. Have your questions or comments read out and discussed at the meeting
4. Have your position (for or against) on policy proposals considered during the consensus process

Video streaming

Selected sessions are video streamed live in MPEG4 format. Archives of this video footage will be available on the APNIC website after the meeting.

◀ Perth, Western Australia is renowned for its beaches and outdoor lifestyles, as well as the fine wineries in the surrounding region.

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Talk is cheap – VoIP deployments to cut the cost of APNIC communications

Voice over IP (VoIP), is a fast-emerging technology with the potential to revolutionise the most basic business communication tool – the telephone. This article explains APNIC's plans for full VoIP deployment and sets out the issues that need to be considered by any organisation looking to replace their traditional phone system.

Just like in most other businesses around the world, APNIC staff members have a phone on their desk. These phones connect to a regular PABX system, via dedicated cabling. APNIC staff members dial 9 to get an outside line. They expect the system to always work. Each staff member can be reached on an individual extension number. All of this is normal and generally good.

But, just like in most other businesses, there are limitations to this system. While a dedicated cabling structure is robust, it's also cumbersome, meaning that each desk that gets set up needs separate cables and sockets for data and phone. If APNIC rearranges seating in the office, staff members must change their extension numbers. APNIC phones can reach, and are reachable by, any phone in the world, but the costs of the calls vary greatly, especially if the other party is in different country. And just like in most other businesses around the world, APNIC relies on its telephony provider for most aspects of phone system configuration.

Times are changing.

APNIC's VoIP trial

The APNIC Secretariat began a trial of voice over IP (VoIP) services to coincide with the APNIC 20 meeting in Hanoi. The first stage of this trial was relatively simple, with each staff member using a software client (or softphone) to connect to a VoIP sever in the Brisbane office. The server uses the Session Initiation Protocol (SIP) standard to provide PABX-style services on a normal Intel and Linux platform.

Staff members in Hanoi used their laptops to make high quality calls back to the office and to each other at no cost. They were also able to call their regular home phones for the cost of a local call. Security for the remote use was provided by the APNIC VPN. This has a dual benefit – in addition to providing security, the VPN also allows the VoIP traffic to bypass any local restrictions or provider blocks. With the smooth success of the initial trial, the second phase of the trial soon followed.

So, since late 2005, next to each staff member's regular phone, there is now a new phone. It looks normal, but rather than connecting to the old PABX system, the new phone connects directly to the internal Ethernet network, which provides power to the phone and access to the VoIP server.

During the test phase, the two phone systems have been run in parallel, allowing the configuration to be optimised and bugs ironed out without interrupting phone services to the Secretariat. By the time this article is printed, it is expected APNIC's legacy phone system will be completely replaced and the VoIP service will be used for all telephony at the Secretariat.

Benefits to Secretariat, members, and the community

Full deployment of the VoIP system offers a range of benefits to the Secretariat, APNIC members, and the broader APNIC community.

For the Secretariat, the most obvious benefit is cost. Many APNIC staff members are required to travel extensively. When on the road, these staff will now be able to avoid international call rates and costly hotel fees by making free direct connections to the office phone system.

▲ The changing face of telephony. A softphone on a laptop can have all of the features of a traditional PABX desk phone, with the added advantages of portability and free calls.

Another advantage is that in a VoIP system, users can be located by a portable user name rather than a fixed line extension. This means each user can have the same identity on their desk phone and the softphone on the laptop. Calls to that person will find them wherever they are online, enabling travelling staff to be more responsive and communications more efficient. The testing so far has also shown that in some cases, not only are international calls cheaper, but they are often of better quality than calls made through older, poor quality phone networks.

Convenience of operation is another benefit to the Secretariat. The VoIP system is software-based and can be administered by the APNIC's own technical staff, eliminating the Secretariat's dependence on an external telephony provider.

For APNIC members, the main advantages are cost and convenience of access. The APNIC Helpdesk has always been available by telephone to all members. However, high international call rates have meant that, in practice, most calls to the Helpdesk have come from within Australia. Now that the address helpdesk@voip.apnic.net is active, anyone with a SIP compliant phone can make a direct phone call to the APNIC hostmasters at no charge. It's not even necessary for the caller to have their own VoIP infrastructure to make this call – a softphone client is sufficient.

This development will make the APNIC Secretariat far more accessible to everyone in the APNIC community, regardless of their physical location.

Future VoIP plans

The Secretariat is also now investigating ways of extending its VoIP services to provide even more benefits to the membership. The plan is to be able to offer VoIP accounts as a member service. Although anyone can now phone APNIC even without their own VoIP infrastructure and account, it is not possible for APNIC to call back to that softphone, or for those without accounts to call

each other. A VoIP user account from APNIC would solve both of those problems.

Furthermore, the SIP addresses that are issued to members could also be registered as specific contacts for membership business, making the process of getting in touch with appropriate people (such as a hostmaster or billing contact) far more efficient.

There are some issues that need to be resolved before this service can launched. The process for issuing and administering the accounts needs to be formalised, as does the security model. Another significant issue arises due to the differing regulatory views on VoIP telephony across the region. The Secretariat is investigating these issues now, but will make announcements about the service in the near future.

More about VoIP: Is it right for your organisation?

Standards-based VoIP uses the Session Initiation Protocol specified in RFC 3261 to control voice-based sessions over data networks. This means businesses can converge their infrastructure, handling LAN and voice on the same layer. This has immediate benefits, both physical and administrative.

In a VoIP-enabled office, it is no longer necessary to run a dedicated phone cable. Because most SIP phones have an additional Ethernet port, the phone can act as hub to a computer and a single cable to each desk will be sufficient. Many phones (such as the ones installed in the APNIC Secretariat) are Ethernet-powered so there is no need for an additional power socket. All of this means reduced costs when setting up or rearranging an office and reduces the cable-clutter common to most work places.

Scalability has always been an issue in traditional PABX phone systems. Adding additional lines and improving functionality generally meant replacing hardware and relying on external technicians. On the other hand, VoIP systems are software driven. Adding new users, configuring call routing behaviours, and extending functionality is generally achieved via a simple software interface (such as web browser). This style of self management will be familiar to system administrators. It can mean lower overheads and faster, more responsive service improvements.

Unlike telephone extensions, SIP accounts identify the user rather than the line. The account can follow the user wherever they may go. Indeed it can be associated to multiple devices simultaneously, such as your desk phone and the softphone client on your laptop. This allows a degree of flexibility never possible with traditional PABX systems. A client can now call their regular contact using a SIP account and it does not matter whether their contact is in the office or working on a laptop in a hotel room on the other side of the world. No one needs to know details about where someone is, so long as they are online. And their location has no implications on the call cost.

Even the format of SIP addresses may offer marketing advantages to business and individuals. SIP accounts follow the same format as email addresses. For example, the APNIC Helpdesk can be reached by email at helpdesk@apnic.net and by SIP phone at helpdesk@voip.apnic.net. Well chosen SIP account names can be easier to remember than phone numbers, making it even easier for customers to get in touch.

Of course, no solution is perfect. There are issues that must be considered when evaluating a possible VoIP deployment.

Calls between VoIP users are free. But when a VoIP user needs to call a regular telephone, their SIP proxy must interface to the public telephone network. This will be charged in the same way as a normal phone call made from the same location as the proxy. Therefore, it is vital to ensure that the VoIP network has adequate security safeguards. If non-authorised users are able to get access to the SIP system, then the potential costs could be very damaging.

Businesses also need to consider human resource issues. While the self-administration model provides cost savings and flexibility, the skills for administering data and voice can differ. Businesses must first ensure that their IT department have the capacity to take on an new dimension of service administration.

Regulatory issues

For use strictly within a business, there are not many legal issues to consider, so long as the service remains compatible with any service or support agreements with customers or vendors. However, businesses considering using a VoIP solution as a total replacement for their standard phone system will need to investigate several issues.

At a basic level, it is vital to ensure that the system is always capable of placing calls to emergency services. Business should also check for any contractual restrictions with their existing telecommunication and Internet service providers.

At a broader level, while many governments are now recognising the benefits of VoIP, this sentiment is not universal. VoIP is illegal in several countries and the type and degree of regulation varies greatly around the world.

Selecting a VoIP solution

The most important step before a business selects a VoIP system is to carefully analyse its existing phone system. Managers need to document the features they currently use, the features they want, and the features they do not need. This will help narrow down a list of vendors.

It is then necessary to conduct a thorough trial of any product before committing to it. The telephone is still the most important communication for many businesses, so it is vital to have faith in the reliability and quality of the VoIP service. While reliability can be analysed objectively, quality of voice communications may be a more subjective thing. Echoes and dropouts may be tangible issues, but if people feel that voices on a phone system 'just don't sound right' then solutions can be hard to find.

Whatever solution is selected must match the business's budget, skill-level, and expectations. Also, even though VoIP services offer the potential for significant cost savings in the medium to long term, the initial outlay can be significant.

Where is VoIP headed?

In the shorter term, the current trend is for businesses to adopt VoIP as an internal system, where the immediate communication benefits are easy to identify. However, support for VoIP is growing rapidly. This is win-win, for not only does it drive greater development of VoIP features, but the more that business are able to communicate exclusively with each other over data networks, the more they can avoid the high cost of standard telephony.

Some countries already have VoIP-aware telecommunications providers, which is a benefit for customer service (although perhaps a challenge for the provider that still needs to recover costs for its legacy systems).

VoIP may be just the starting point for future communication developments. The SIP standard supports not just voice, but other session-based media as well, such as video. Already, applications are hitting the market which integrate voice, video, and IM over SIP. In the long term, the biggest impact of VoIP may not be on telephony, but rather on the fundamental nature of business communication.

- Terry Manderson & Gerard Ross

The APNIC debogon project

The APNIC Secretariat is launching a new initiative this year with the working title of the "debogon project". The project relates to problems being faced by APNIC customers with regard to routing newly obtained address space, and concerns the increasingly widespread use of "bogon filters". In this article, we look at the issues which have led to the need for this project, and at the steps the APNIC Secretariat plans to take.

What are bogons?

The word "bogon" refers to "an address or, more generally a route object, that is not duly authorised by the entity to which the address, or resource, was originally assigned." [Huston, 2004] This can mean two things. Either:

a) The resource has been assigned, and subsequently "hijacked" (taken over by an unauthorised user), or

b) there is no record of the IANA ever having allocated the resource to an RIR or end-user.

Bogons are not necessarily the result of malicious actions – they can come into being through something as simple as a keystroke error. This does not mean, however, that they are harmless – an unauthorised use of an IP address, even if inadvertent, can cause a range of problems for Internet routing, and, as noted by Geoff Huston, "a small, but nevertheless disturbing amount [of bogon traffic] is the outcome of deliberate attack." [Huston 2005]

In the final analysis, there is no legitimate reason for an unauthorised route object to appear in the Internet. There is therefore no reason for any end user to ever want to receive information from a bogon source, and this has led to the increasingly widespread use of bogon filters.

Bogon filtering

Bogon filters are route filters implemented by network administrators that block network traffic from pre-identified bogon sources, including private-use address space (as designated in RFC 1918) and address blocks not yet allocated by the IANA. There are a rang of online resources which provide information on bogon address ranges, including Team Cymru, CompleteWhois, and the CIDR Report (see **More information**). By implementing these filters, users of the network (often ISP customers) are prevented from seeing IP addresses in the specified bogon ranges, and are thus protected from the DoS attacks, email abuse, hacking, and other security problems which can originate from bogon address space.

Filtering issues

Geoff Huston, in his article 'Hunting the Bogon', writes:

> The problem relating to bogons in the Internet can be stated more generally as a lack of 'good' information about what are 'valid' or 'authorized' addresses that we should see in routing exchanges and that we should see as source or destination fields in packets.

A lack of "good information" is also an apt description of the problem with bogon filtering. Filtering of any kind is judged not only on its efficiency at blocking undesirable material, but also on its ability to identify desirable material. Cases in which a filter misidentifies and blocks a legitimate object, or 'false positives', are obviously problematic.

In the case of bogon filters, many include those address ranges not yet allocated by the IANA, and it is this which can pose a problem for the RIRs and their customers. The Wikipedia perhaps puts the issue most succinctly: "IP addresses that are bogus today may not be bogus tomorrow." [Wikipedia, "Bogon filtering"]

If the bogon filters are not kept up to date, they may not take into account those address ranges that have recently been allocated by the IANA. When APNIC or another RIR begins to make allocations from one of these recently allocated address blocks, the recipient of the address space may find themselves (and their customers) unable to reach parts of the Internet because their address is being blocked by bogon filters.

As the use of bogon filters has become more widespread, so too has the need to address this issue. Other organisations around the world have already taken steps in this regard, including Team Cymru, the RIPE NCC, and the other RIRs.

Team Cymru is an independent corporation concerned with Internet security, with a wide range of international partners and customers. As a free service to the Internet community, they provide up-to-date information on bogon prefixes in a variety of formats. Network administrators can access this information via the web, Team Cymru's bogon route server (which users can access via a multihop eBGP peering session), or other methods, and can use this information to generate a bogon filter for their own network. Team Cymru's bogon prefix list is updated daily with IANA allocation data, so those network operators who maintain up-to-date bogon filters based on the Team Cymru prefix list will rarely find themselves blocking legitimate prefixes. The fact that this resource exists, however, does not mean that it is properly employed by all network operators, and it has therefore not eliminated the problem entirely.

The RIPE NCC, RIR for Europe and the Middle East, as well as assisting in Team Cymru's project, has taken their own initiative which involves notifying their community about new address blocks before making any allocations from them. By announcing "pilot" prefixes from new address blocks, the NCC staff can then analyse routing data for these prefixes and compare it to regular production prefixes. If it appears that certain ISPs are using bogon filters which block the pilot prefixes, then they can be alerted to this fact before the new address block goes into general use.

The other RIRs are also involved in initiatives to ensure their allocations are not hampered by bogon lists, ARIN in collaboration with Team Cymru, and LACNIC independently.

APNIC's debogon project

The APNIC Secretariat is planning to implement its own project this year to address the problem of new APNIC allocations and assignments being blocked by bogon filters. In a similar vein to the RIPE NCC project, the APNIC initiative will identify ISPs whose filters are blocking new address blocks, and notify the network administrators responsible that their bogon filters need to be updated.

The APNIC project will involve advertising test prefixes from a newly-received address block for one month prior to officially making allocations from it. Address blocks recently allocated by the IANA will be tested in the following ways:

- Tests will be performed to determine whether a live host from each announced prefixes is available for ping.
- A thirty day report of test prefix visibility from various looking glasses and eBGP peers will be prepared.

Using these methods method, the Secretariat will be able to identify those networks whose bogon filters have not been updated to include the address block about to be allocated. The APNIC Secretariat can then make contact with the administrators of these networks and advise them to update their filters.

It is important to note that this project will not equate to a guarantee of route-ability. The responsibility for keeping

bogon filters up-to-date lies with the organisations that have implemented them across their networks, and while APNIC can advise these organisations when their filters are out-of-date, it cannot guarantee that the filters will be updated. The matter is a source of understandable frustration for APNIC members and customers, however, and the Secretariat has therefore initiated this project in an attempt to reduce its incidence.

Project timeline

The APNIC Secretariat has been testing this initiative since late 2005, ensuring that APNIC can communicate effectively to upstream organisations whose bogon filters need to be updated. It is expected that the debogon measures will be officially implemented at some point over the coming months.

More information

The following resources contain further information on bogons, bogon filtering, and other debogon initiatives being undertaken:

The CIDR Report http://www.cidr-report.org

Team Cymru http://www.cymru.com

CompleteWhois

http://www.completewhois.com/bogons

If you require further information about the APNIC debogon project, please contact APNIC hostmasters at

helpdesk@apnic.net

- Chris Buckridge

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KAME project set to conclude

▲ The KAME IPv6 project became well known for its turtle, which danced on the browsers of those who visited by IPv6.

A chapter in the early history of IPv6 development is coming to a close with the announcement that the KAME project has completed its work and will be disbanded.

The KAME project was launched in Japan in 1998 to establish IPv6 platform technology and deploy IPv6 technology to the industry. Originally intended to run for two years, the project was extended several times to continue its important work.

That work has now completed, having delivered a free IPv6 protocol stack under the BSD license, free IPsec, and free reference code for advanced internetworking.

In a recent interview with *IPv6style.jp*, Professor Jun Murai explained that the KAME project set out to gather together "top gun engineers" to create the "strongest IPv6 protocol stack from scratch". In the end, this work resulted in the integration of existing protocol stacks with the work of the KAME team.

Professor Murai told *IPv6style.jp* that the "KAME Project's goal at the beginning was that the source code we write would help engineers deepen their understanding of the protocol while looking at the source code. We wanted that reference implementation. The KAME Project members have verified the protocol that was mere theory up until then by implementing the protocol stack on their own, and then they fed the results back to the standardization efforts."

"Various companies asked us to let them use the protocol stack that the KAME Project developed; however, it was when Apple told us that they wanted to use it for Mac OS X that we started clearly feeling that our objectives were achieved," said Professor Murai.

Project organisers intend for the KAME IPv6 protocol stack to eventually be fully merged into BSD operating systems to be maintained by the BSD community.

The final stages of the project, will focus on integrating all remaining KAME functionality into the *BSD operating systems. Project organisers expect to complete the final effort by the end of March 2006. Some advanced features that remain under development will be taken over by other working groups in the WIDE project.

KAME project references are available at: http://www.kame.net

The *IPv6style.jp* interview with Jun Murai is at:

http://www.ipv6style.jp/en/special/kame/20051205

SIG Chair profiles

The Chairs of the various APNIC Special Interest Groups play an important role in the APNIC community. As well as heading the SIG meetings at each Open Policy Meeting, the Chairs moderate the associated SIG mailing lists, prepare the programme for each meeting, advise community members who wish to make proposals, and generally ensure that the SIGs operate smoothly and efficiently.

To help you get better acquainted with the APNIC SIG Chairs, we've asked each of them the following questions:

a. Your current role and organisation?

b. How long have you been attending APNIC meetings?

c. How long have you been a SIG Chair?

d. Why do you volunteer as a SIG Chair?

e. What Internet technologies or issues interest you the most?

f. What do you think are the most important issues currently relevant to your SIG?

Policy SIG

Kenny Huang, Chair

a. Board, Asia Infra International Ltd; Advisor, e-Government program, Taiwan

b. I have been attending APNIC meeting more than 6 years.

c. I was elected as the Policy SIG Chair in APNIC19 (Kyoto, Feb 2005)

d. As I have been working with Internet community for years, I believe contribution and collaboration is the key to moving the community forward. I was the Address Council member of ASO, and the co-chair of Policy SIG. To be a SIG Chair can be seen as an extended commitment to the community.

e. I am interested in many Internet technologies, especially engaged in the IDN development (Co-author of RFC3743). Routing technology is the one I am most interested in.

f. APNIC members are from various countries in Asia Pacific region. They have different expectations from address policy. They are concerned about a diverse range of issues, and thus it is a challenge to reach group consensus. To harmonise regional policy needs and integrated as a comprehensive policy is the most important issue to the Policy SIG.

Eugene Li, Co-chair

a. Department manager/CNNIC

b. Since 2003

c. Elected in APNIC 20

d. Feel happy to serve the Internet community.

e. Internet Governance

f. More active participants needed

Toshiyuki Hosaka, Co-chair

a. Manager / Japan Network Information Center (JPNIC)

b. Since APNIC 15 - Taipei, Taiwan, February 2003

c. Since APNIC 18 - Nadi, Fiji, September 2004

d. Working in JPNIC, National Internet Registry, I felt (and feel) I should contribute to the community in some way.

e. IPv6 deployment and the discussion on the Internet Governance.

f. IPv6 address Policy. That is not so well understood by the community and still under discussion phase.

Routing SIG

Philip Smith, Chair

a. Senior Consulting Engineer, Corporate Development, Cisco Systems Inc

b. 7 years.

c. Since the SIGs started, whenever that was!

d. I don't recall volunteering... ;-) I think it was more a case of being encouraged to help run the Routing and IX SIGs!

e. Routing system growth scaling, routing security & integrity, interconnections, technical education and distribution of Internet operational knowledge, and IPv6.

f. Routing system growth, scaling & security.

Randy Bush, Co-chair

a. Scientist, IIJ

b. Some years.

c. Maybe a year.

d. I like routing!

e. Routing research, technology, and policy.

f. Routing security; Routing stability and predictability; Routing scaling.

IX SIG

Philip Smith, Chair

a. Senior Consulting Engineer, Corporate Development, Cisco Systems Inc

b. 7 years.

c. Since the SIGs started, whenever that was!

d. I don't recall volunteering... ;-) I think it was more a case of being encouraged to help run the Routing and IX SIGs!

e. Routing system growth scaling, routing security & integrity, interconnections, technical education and distribution of Internet operational knowledge, and IPv6.

f. Encouraging more local interconnects between ISPs.

Che Hoo Cheng, Co-chair

a. Head of IP Business, Asia, FLAG Telecom

Che-Hoo is a well-known Internet pioneer in Hong Kong. He helped to set up the first Internet link in Hong Kong at the The Chinese University of Hong Kong (CUHK) in 1991, he helped to set up .hk domain name registration service in 1993/94, and he set up Hong Kong Internet Exchange (HKIX) in 1995.

He was also in charge of the set-up and operations of the CUHK campus network, and worked there for more than 15 years, until August 2000. He then joined Level 3 as Senior Director, Global IP Services, Asia and was in charge of the IP Line of Business in Asia. He worked there until January 2002 when Reach took over Level 3 Asia. In June 2002, he joined Hong Kong Internet Registration Corporation (HKIRC) as CEO which is in charge of .hk domain name registration officially. He left there in Jan 2003 to start his business venture. Since January 2004, he has led the application of .ASIA Top Level Domain (TLD), together with a number of ccTLDs and regional organisations. First stage of approval was given by ICANN Board in Dec 2005 after two years of hard work.

As community service, Che-Hoo holds/held key positions in Asia Pacific Network Information Centre (APNIC), Hong Kong Internet Service Providers Association (HKISPA), Hong Kong Information Technology Federation (HKITF) and the newly established Hong Kong Chapter of Internet Society (ISOC).

He has been the Co-chair of IX SIG since 2003.

Database SIG

Xing Li, Chair

a. China Education and Research Network (CERNET) Center, Tsinghua University, Beijing China

b. Since 1996

c. About 6 years

d. Database SIG is very important to the policy implementation and the service quality of APNIC.

e. Inter-domain routing, security infrastructure, and IPv6.

f. Balance between information openness and privacy.

Hakikur Rahman, Co-chair

IPv6 technical SIG

Kazu Yamamoto, Chair

a. Senior Researcher, Internet Initiative Japan Inc.

b. 5 years or so

c. I became a SIG chair after APNIC 14. Thus three years and half.

d. I have been a technical leader of the KAME project for 8 years and at the time when I became a chair of IPv6 technical SIG, my main research topic was IPv6. Thus I thought I could volunteer for the SIG.

e. Currently I'm involved in antispam activities. My main research topic is to accelerate deployment of SPF(Sender Policy Framework).

f. - Deprecation of ip6.int

- What will happen when Windows Vista comes?

- What will happen after year 2008?

- Lifetime of IPv4

Tomohiro Fujisaki, Co-chair

a. Senior Research Engineer, Information Sharing Platform Laboratories

Nippon Telegraph and Telephone Corporation

b. My first APNIC meeting was APNIC 11 in Kuala Lumpur, Malaysia.

c. From the APNIC 19 meeting in Kyoto (Feb 2005).

d. I believe IPv6 is very important especially in AP region, and I want to support the deployment of IPv6 (and the Internet).

e. Management of IPv6/IPv4 co-existing network.

f. IPv6 network will become more popular in a few years. Along with that IPv6 deployment, many problems will occur in many aspects. What our IPv6 Technical SIG should do is to share such kind of problems and solutions especially in AP region.

Tao Chen, Co-chair

a. Engineer, China Internet Network Information Center (CNNIC)

b. 2 years

c. Half of year

d. I hope I can contribute to the IPv6 SIG and APNIC meeting.

e. How to make IPv6 network plan according to each national situation in order to keep IPv6 routing table enough small? How to allocate and reserve IPv6 address for each nation in that each one can get enough addresses at reasonable price to build its IPv6 network.

f. To introduce more and more IPv6 deployment and experience to all.

NIR SIG

Izumi Okutani, Chair

a. Policy Liason/Japan Network Information Center

b. Since APNIC 10 in Brisbane, so 5 years.

c. I'm still very new as a chair - 6 months (since Feb, 2005).

d. I had been participating in APNIC meetings as an attendee and my inputs in the past mainly represented the interests of my own organisation or the JP community. I thought it was now the time for me to think for the good of the community as a whole and wanted to take a part.

e. Internet Governance, not in terms of the wide definition discussed in WSIS, but focused on bottom-up participation in the policy development and coordination between national and regional communities.

f. The fundamental revision of the NIR fee structure, which would complete the basis of the NIR scheme.

In my opinion, NIRs (National Internet Registries) are in a very unique position within the AP community and even among the RIRs as a whole. There are many distinct features about NIRs both operationally and in terms of membership which makes them different from standard APNIC members.

The NIR SIG has been, and still is working on clearly defining the position of the NIRs as a part of APNIC's operation and membership scheme.

The criteria and operation of NIRs has been defined and implemented in APNIC14, and we are now moving on to revise the NIR fee structure which would be more consistent with the role and operation of the NIRs. I don't expect this to be an easy task as each NIRs as well as APNIC's situation and opinions are different, but I would like to encourage constructive discussions at the SIG and hope we can all work together to create a reasonable fee structure.

David Chen, Co-chair

a. Senior Engineer with the Taiwan Network Information Center

b. Since APNIC 12 in Taipei, around 5 years.

c. I have been as a Co-chair since February 2005.

d. Since I have participated NIR SIG for many years as a TWNIC's representative, I feel that the NIR community is a very helpful platform for NIRs. NIRs are able to exchange opinions and discuss some issues which are concerned to all NIRs. I think it is time for me to contribute my time and ability for the good of the community.

e. The Internet policy development, I'm interested in observing Internet policy development trend not only focused in Asia Pacific region but also in global.

f. I think the NIR fee structure issue is the most important at current stage in NIR SIG. We are seeking a balance and acceptable point between APNIC, NIRs and Asia Pacific communities to restructure NIR fee. It's not quit easy to make, hope we can work out a reasonable solution.

DNS operations SIG

Joe Abley, Chair

a. I run a small consulting company which does work for various well-known organisations.

b. The first meeting I attended was APNIC 8 in Singapore, 1999.

c. I became DNS operations SIG Chair in 2003, I think. The first meeting I attended as Chair was APNIC 16 in Seoul. The APNIC-sponsored F-root server was installed at NIDA in Seoul (then KRNIC) the same week.

d. I volunteer because I think that encouraging community participation in APNIC is important. The Internet was built upon such cooperation; it wouldn't function without it.

e. Instrumentation of routing systems; anycast service distribution; DNS.

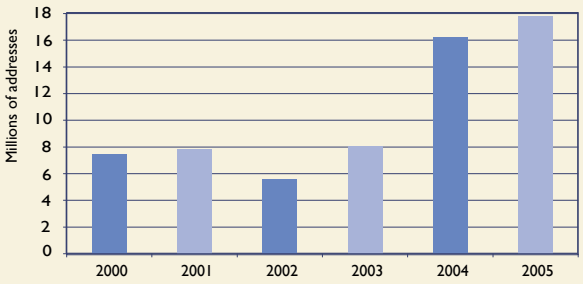
f. Securing the DNS to make it more resistant to attack, and to provide integrity verification to the data contained within the system as a whole.

APNIC by Numbers

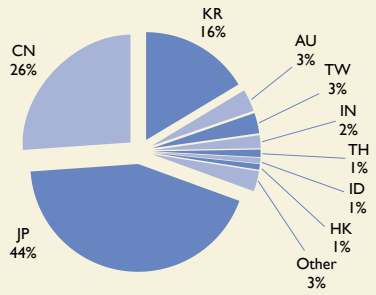
Fast facts and figures about APNIC and the region, this time with an Australian theme to match APNIC 21.

21	The 21st APNIC Open Policy meeting is being held in Australia 27 February to 3 March, 2006
2000	Last time an APNIC meeting was held in Australia was year 2000 (APNIC 10)
14 billion	14 billion MB of data was downloaded in Australia in Q1 2005
689	There are currently 689 ISPs operating in Australia
6	There are approximately 6 million Internet subscribers in Australia
1989	Australia's first large network, AARNet (later Telstra BigPond) was established in 1989
15	Australia ranks 15th in the world in Internet usage per capita
17.8M	Approximately 17.8 million IPv4 addresses were allocated by APNIC in Australia in year 2005
3%	The amount of IPv4 addresses allocated in Australia in 2005 represents about 3 percent of the total amount of IPv4 addresses allocated in the Asia Pacific by APNIC.

IPv4 addresses allocated in Australia 2000-2005



Distribution of IPv4 allocated in 2005



Staff changes

Administration Department

Louise Tromp, Human Resources & Office Manager

Louise Tromp has recently joined APNIC as Human Resources and Office Manager. Louise has extensive experience in the HR field, and has worked for companies including Honeywell and Boeing in Australia. She graduated in South Africa, where most of her work experience was gained in human resource roles within technology development companies, before moving to Australia. She has a particular interest in the IT industry.

Louise is responsible for all human resource activities within the organisation, and also manages the day-to-day functioning of the APNIC office.

Policy Department

Samantha Dickinson, Policy Officer

Samantha Dickinson has been appointed to the role of Policy Officer. She originally joined the APNIC Documentation department as a Technical Editor in 2001. Samantha has a Master of Information Technology.

As a Policy Officer, Samantha will research and report on issues related to APNIC and assist in managing of policy implementation and related projects.

Technical Services Department

Siamak Hadinia, Systems Administrator

Siamak Hadinia will take on the role of Systems Administrator in the APNIC Technical Services group as of April 2006. Siamak originally joined APNIC in December 2004 as an intern with the Technical Services group, before being appointed to a position as Internet Resource Analyst (hostmaster) in August 2005. In his new role Siamak will be responsible for day to day administration and operations support of APNIC systems and network infrastructure.

◀ The APNIC homepage has undergone a redesign in the last month. Visit www.apnic.net to see for yourself!

Training schedule

2006

February

- **22 - 3 March** Perth, Australia (In conjunction with APNIC 21 / APRICOT 06)

March

- **22 - 24** Wellington, New Zealand (In conjunction with NZNOG 06)
- **27 - 30** Manila, Philippines

April

- **3** Guam
- **25 - 26** China (Venue TBA)

May

- **2 - 5** Bangkok, Thailand
- **26** Brisbane, Australia
- **29 - 31** Brisbane, Australia

June

- **TBA** Jakarta, Indonesia
- **19 - 23** PACNOG 2 (venue TBA)
- **TBA** Japan (Venue TBA)

July

- **TBA** Hyderabad, India
- **TBA** Islamabad, Pakistan
- **27 - 4 Aug** Karachi, Pakistan (In conjunction with SANOG 8)

August

- **21 - 26** PICISOC (Venue TBA)

September

- **TBA** APNIC 22
- **27 - 29** Ulaan Baatar, Mongolia

Octomber

- **9 -13** Bangkok, Thailand
- **16 - 20** Colombo, Sri Lanka
- **30 - 1 Nov** Hong Kong

November

- **TBA** CNNIC OPM
- **TBA** Taipei, Taiwan (In conjunction with TWNIC OPM)
- **27** Kuala Lumpur, Malaysia
- **28 - 30** Kuala Lumpur, Malaysia

The APNIC training schedule is provisional and subject to change. Please check the web site for regular updates at:

www.apnic.net/training

If your organisation is interested in sponsoring APNIC training sessions, please contact us at:

training@apnic.net

Calendar

APNIC 21 / APRICOT 2006
22 February - 3 March 2006
Perth, Australia
http://www.apnic.net/meetings/

ITU World Telecommunication Development Conference
7-15 March 2006
Doha, Qatar
http://www.itu.int/ITU-D/wtdc06/

65th IETF
19-24 March 2006
Dallas, USA
http://www.ietf.org/meetings/meetings.htm

NZNOG 06
22-24 March 2006
Wellington, New Zealand
http://www.nznog.org/

ICANN Meeting
27-31 March 2006
Wellington, New Zealand
http://www.icann.org/meetings

ARIN XVII
9-12 April 2006
Montreal, Canada
http://arin.net/meetings

Global IPv6 Summit 2006
12-14 April 2006
Beijing, China
http://www.ipv6.net.cn/2006/en/index.asp

APECTEL 33
23-28 April 2006
Calgary, Canada
http://apectel33.org/

PITA 10th Annual General Meeting
24-28 April 2006
Brisbane, Australia
http://www.pita.org.fj/

RIPE 52
24-28 April 2006
Istanbul, Turkey
http://ripe.net/ripe/meetings/current.html

Thailand IPv6 Forum
2-4 May 2006
Bangkik, Thailand
http://www.thailandipv6.net/

AfNOG
7-15 May 2006
Nairobi, Kenya
http://www.afnog.org/afnog2006

AfriNIC 4
16-17 May 2006
Nairobi, Kenya
http://www.afrinic.net/meeting

AusCERT 2006
21-25 May 2006
Gold Coast, Australia
http://conference.auscert.org.au/conf2006/

LACNIC IX
22-26 May 2006
Guatemala City, Guatemala
http://lacnic.net/en/eventos

ICANN meeting
26-30 June 2006
Marrakesh, Morocco
http://www.icann.org/meetings/

How to contact APNIC

Street address	Level 1, 33 Park Road, Milton, Brisbane, QLD 4064, Australia
Postal address	PO Box 2131, Milton QLD 4064, Australia
Phone	+61-7-3858-3100
SIP	helpdesk@voip.apnic.net
Fax	+61-7-3858-3199
Web site	www.apnic.net
General enquiries	info@apnic.net
Hostmaster (filtered)	hostmaster@apnic.net
Helpdesk	helpdesk@apnic.net
Training	training@apnic.net
Webmaster	webmaster@apnic.net
Apster	apster@apnic.net

▶ The Member Services Helpdesk provides APNIC members and clients with direct access to APNIC Hostmasters.

Helpdesk Hours
9:00 am to 7:00 pm
(UTC + 10 hours)
Monday - Friday

Member Services Helpdesk

helpdesk@apnic.net

www.apnic.net/helpdesk

☎ +61 7 3858 3188

+61 7 3858 3199

Communicate with APNIC via MyAPNIC

APNIC members can use MyAPNIC to:

- view APNIC resources held by their organisation
- monitor the amount of address space assigned to customers
- view current and past membership payments
- 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