2002 Annual Report

Asia Pacific Network Information Centre

www.apnic.net

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APNIC

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

Highlights of 2002

New NIR policies implemented

Address policy developments

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Introduction

Dear APNIC Member

This past year has seen considerable change in the Internet industry worldwide. The "dot-com crash" has continued and in most parts of the world, Internet infrastructure development has slowed. Within the Asia Pacific region, however, the effects have been felt differently in various locations, with some areas continuing to see strong growth.

APNIC Director General, Paul Wilson

Overall, 2002 was APNIC's biggest year by most measures. Most critically, total allocations of IPv4 address space exceeded those of the previous year, and for the first time, exceeded total allocations made by ARIN or RIPE NCC. Allocations of IPv6 space, though still relatively slow, increased substantially, while AS number allocations also increased.

APNIC membership continued to grow slowly but steadily, reaching a total of 768 direct members by the end of the year. An increase in new memberships in the second half of the year gives hope for more growth in the short term.

APNIC service levels have been maintained or improved during 2002. While demand for resource services grew only slowly, APNIC's team of Internet Resource Analysts introduced a telephone helpdesk and a system of account management whereby members receive a more personal and consistent level of attention, facilitating faster access to services and Internet resources.

Training activities have increased substantially this year, with 23 courses delivered in 19 cities. Under demand to increase both the frequency and breadth of APNIC training, the Secretariat will continue to build this area, pursuing new strategies that will more rapidly extend the "reach" of our training.

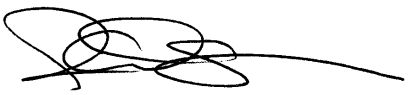
APNIC online services have been further strengthened in 2002, with upgrades at the Japan and Brisbane facilities, and with the installation of a major point of presence in the Hong Kong Internet Exchange (HKIX), completed in early 2003. A cooperative project was initiated to increase the accessibility of root nameservers in the Asia Pacific, answering a serious long-standing concern about essential infrastructure in this region.

Finally, in 2002, we welcomed LACNIC as the fourth officially recognised Regional Internet Registry, and we look forward to working closely with them in future. Meanwhile, the negotiations of the RIRs with ICANN have continued, both before and throughout the "ICANN Reform" process which started during the year. The major RIR concern is, as always, to ensure that our responsibilities can be fulfilled and services provided safely into the future, regardless of this or any future restructuring of the global Internet coordination framework.

Once again, I am proud to present this report of APNIC's activities in another successful year of operation, and I am sincerely grateful to the Members of APNIC for their ongoing support. As always, the staff of the APNIC Secretariat have represented a huge strength of the organisation, and I am ever grateful to them for their hard work.

We look forward to serving you again in the coming year.

Kind regards



Paul Wilson

What is APNIC?

APNIC is one of four Regional Internet Registries (RIRs) currently providing allocation and registration services to support the operation of the Internet globally. It is a not-for-profit open membership organisation, whose members and stakeholders determine the policies and direction of the organisation through open and consensus-based participatory processes.

What is APNIC's role?

Within the Asia Pacific region, APNIC is charged with ensuring the responsible management of IP addresses and the related numeric resources which are required for stable and reliable operation of the Internet globally. APNIC provides resource services, training and education, open policy meetings, and representation of regional community interests on the global stage.

APNIC serves the Asia Pacific region, comprising the following 62 economies* in Asia and Oceania.

Economies in the AP region		
Afghanistan	**Kiribati**	**Palau**
American Samoa	Korea, Dem. People's Rep.	**Papua New Guinea**
Australia	**Korea, Republic of**	**Philippines**
Bangladesh	**Laos People's Dem. Rep.**	Pitcairn
Bhutan	**Macau**	Reunion
British Indian Ocean Territory	**Madagascar**	**Samoa**
Brunei Darussalam	**Malaysia**	Seychelles
Cambodia	**Maldives**	**Singapore**
China	Marshall Islands	**Solomon Islands**
Christmas Island	**Mauritius**	**Sri Lanka**
Cocos (Keeling) Islands	Mayotte	**Taiwan**
Comoros	Micronesia, Fed. States of	**Thailand**
Cook Islands	**Mongolia**	Tokelau
East Timor	**Myanmar**	Tonga
Fiji	**Nauru**	**Tuvalu**
French Polynesia	**Nepal**	**Vanuatu**
French Southern Territories	**New Caledonia**	**Vietnam**
Guam	**New Zealand**	Wallis and Futuna Islands
Hong Kong	Niue	
India	Norfolk Island	
Indonesia	**Northern Mariana Islands**	**Total economies: 62**
Japan	**Pakistan**	**Total with APNIC members: 43**

* Economies recognised within the Regional Internet Registry system are defined according to the International Standards Organization's coding system (ISO-3166). Economies in bold are currently represented in the APNIC membership.

How is APNIC structured?

APNIC's structure provides openness and transparency in all decision making processes. This structure comprises:

- Members, who vote on issues during Member Meetings and provide input through various channels throughout the year.
- APNIC Open Policy Meetings, where all interested parties may participate in knowledge sharing, networking, policy development, and training.
- An Executive Council (EC), elected by the members to represent them in policy- and decision-making between Member Meetings.
- The Secretariat, APNIC's staff, which carries out the day to day work of the organisation.

The Executive Council

The APNIC By-Laws provide for a seven-member Executive Council (EC), whose main roles are to represent members between Member Meetings and to oversee the operations of the APNIC Secretariat, including inspection of budgets and financial reports.

EC members meet monthly, generally by teleconference, but with face-to-face meetings during APNIC Open Policy Meetings. They are not paid for their services, although APNIC may fund their attendance at important meetings.

EC members are elected by the membership for two-year terms. In 2002, the following representatives served on the EC:

Executive Council Chair, Che-Hoo Cheng, at APNIC 14.

EC Member	CC	Serving until
Che-Hoo Cheng (Chair)	HK	March 2004
Byung-Kyu Kim (Treasurer)	KR	March 2003
Geoff Huston (Secretary)	AU	March 2004
Maemura Akinori	JP	March 2004
Qian Hualin	CN	March 2003
Xing Li	CN	March 2003
Kuo-Wei Wu	TW	March 2003

EC activities in 2002

In 2002, the EC held three face-to-face meetings as well as their regular monthly teleconferences. Several of the many issues which received EC attention are described below.

ICANN reform and the ASO

One of the primary responsibilities for EC in 2002 was to work closely with the boards of other RIRs on the negotiations relating to the ICANN contract and the ICANN reform process. Although several meetings were held between the RIRs and ICANN, these negotiations will continue into 2003. On a related note, the EC took steps to improve the level of contact between the EC and the ASO Address Council (AC), by arranging face-to-face meetings during APNIC Open Policy Meetings.

Financial oversight

APNIC budgets are approved by the Membership at the first APNIC Member Meeting (AMM) of each year. The EC then tracks the performance of the Secretariat against the budget by reviewing monthly financial reports at each of their meetings. Despite the difficult economic conditions which continued through 2002, the EC was pleased to note an end-of-year financial result that was very close to the original budget.

Policy development process

The EC also monitors the APNIC policy development process. One policy, in particular, that was the subject of the EC's attention in 2002 was the re-opening of the NIR membership category to allow applications for forming new NIRs. More details are provided in "Major policy decisions" (p.14).

Minutes of EC meetings are published on the APNIC web site at:
http://www.apnic.net/ec

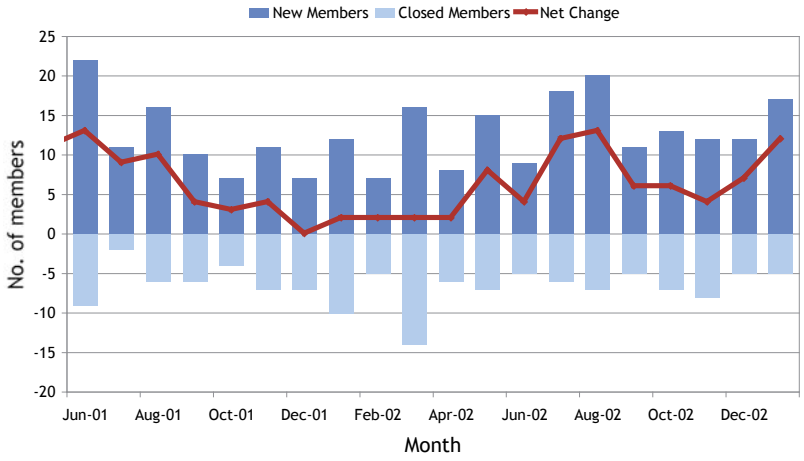
Membership status

A year of slow but steady growth

The global slowdown that has affected the Internet industry since 2000 continued into 2002. Nevertheless, although the rate of growth remained slow, the total APNIC membership grew by 68 in 2002, with positive net gains each month. After a particularly slow first quarter, the membership growth trend showed gradual improvement throughout the balance of the year.

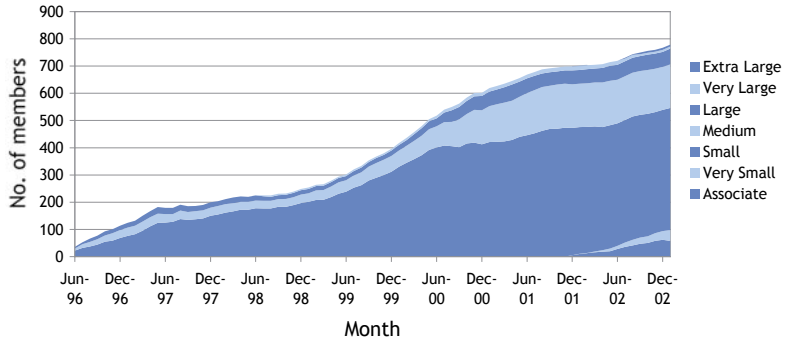
While 153 new members joined APNIC in 2002, the Secretariat was required to close 85 existing memberships. The majority of the closures (82 percent) were due to organisations going out of business, voluntarily closing their membership, or becoming uncontactable. The remaining 18 percent of the closures were due to mergers and acquisitions among existing members.

APNIC membership growth (net, by month)



As was the case last year, many external factors make it difficult to predict the performance of the industry in this region in 2003. Although the current trend indicates a slow recovery in the membership growth rate, APNIC will take a conservative approach to the 2003 budget.

APNIC membership growth (cumulative, by category)



New membership structure fully implemented

By the end of 2002, all APNIC memberships had been brought within the terms of the revised membership tiers and membership agreement that were introduced at the end of 2001.

An important aspect of the revised fee structure was the abolition of the initial US$1,000 account startup fee. New members who joined in 2002 were able to start at the Associate level, with their tier not to be reviewed until the renewal of their membership. An IP resource application fee of US$2,500 applies only to the member's first address allocation request and does not apply to Critical infrastructure assignments, experimental allocations, IXP assignments, and AS numbers.

Despite the changes, members retain the option to take out a higher tier of membership than their address holdings would require. Several new members in 2002 took this option, electing to start above the Associate tier.

Developments in NIR membership

Ever since APNIC was first established, National Internet Registries (NIRs) have played a vital role, sharing APNIC's service responsibilities at a national level, and providing services in the local languages. APJII, CNNIC, JPNIC, KRNIC, and TWNIC have each contributed greatly to aspects of APNIC's operations, while also providing representation of their own memberships within the broader Internet community.

When APNIC was established, the majority of current NIRs already existed, or were being formed, and all were incorporated within APNIC under their own unique policy and operational conditions. Because of the need to develop more consistency in the NIR model, APNIC decided in 1998 that no further NIRs should be recognised.

Soon after the suspension of new NIR memberships, the APNIC NIR Meeting was established, first as a closed working group of NIR representatives and APNIC staff, and then as an open policy development forum. Thanks to the hard work and goodwill of the NIRs, 2002 saw the release of two major APNIC documents – one setting out a clear framework for the NIRs to harmonise their operations, and the other providing criteria and procedures for establishing and recognising new NIRs.

By the end of 2002, the first applications for new NIRs had been received. It is hoped that these developments will serve to strengthen the level of cooperation and coordination within the Asia Pacific Internet community and provide impetus to the industry development in the region.

The documents "Criteria for the recognition of NIRs in the APNIC region" and "Operational policies for National Internet Registries in the APNIC region" are both available at: http://www.apnic.net/docs

APNIC Secretariat status

The APNIC staff

The Annual Report for 2001 predicted low to moderate growth in the staffing of the APNIC Secretariat in 2002. Indeed, this is what happened, with a net increase in staffing of two, taking the total staff number to 34.

Significant recruitments in 2002 were the new trainer and training development consultant.

Another significant development in Secretariat staffing was the appointment of a Research and Liaison Officer for the Pacific Islands. This appointment is intended to help increase participation from the Pacific Island sub-region in the wider APNIC community and to better inform APNIC of the particular development needs of the industry in that area.

AP region languages spoken at APNIC

Bahasa Indonesian	Japanese	Sinhalese
Bangla	Korean	Taiwanese
Cantonese	Malay	Telugu
French	Mandarin	Thai
Hindi	Filipino (Tagalog)	Vietnamese

The APNIC Secretariat staff

Multilingual Helpdesk launched

In April 2002, the Member Services Helpdesk commenced operation. The Helpdesk, which is staffed by APNIC's hostmaster team, provides a single point of contact for all member enquiries.

The Helpdesk has a dedicated phone number and email address and extended operating hours – making APNIC services more accessible and convenient across the various time zones of this region. At the time of publication, the Helpdesk services are available in the following languages (with more to be added in the future): Cantonese, English, Filipino (Tagalog), Hindi, Japanese, Mandarin, Telugu, Thai, and Vietnamese.

Helpdesk hours are 9am to 7pm (UTC+10) Monday-Friday.

The intention of the Helpdesk is to achieve faster turnaround times for enquires relating to the status of resource requests, help in completing application forms, membership, billing, and database issues. Although initial demand on the Helpdesk was gradual, over the course of the 2002 it came to be a well-used service. The Secretariat will continue to promote this service in the coming year.

Office expanded without interruption to service delivery

In August 2002, the APNIC Secretariat office was expanded into adjoining space that had become available. This allowed for the necessary expansion of the facilities at minimal cost with no disruption to services. It is anticipated that this expansion will be able to meet all of the APNIC Secretariat's needs for the foreseeable future.

Global coordination and regional development

ICANN evolution and reform

With the formation of the Address Supporting Organization (ASO) in 1999, the general relationship between ICANN and the RIRs was set out in a Memorandum of Understanding. Since then, APNIC and the other RIRs have been involved in extensive negotiations to finalise individual contracts under which ICANN provides specific services to the RIRs.

Another dimension was added to those discussions at the end of 2001 with the announcement of the ICANN reform process, intended to redefine both ICANN and its relationships with constituents including the ASO and RIRs.

In response to the Evolution and Reform Committee's interim reports and the "Blueprint for Reform", the joint boards of the RIRs issued several statements, reaffirming the RIRs' ongoing responsibility in managing Internet address resources and the central importance of bottom-up policy making processes in the regions.

In October, the RIRs released their own "RIR Blueprint for Evolution and Reform of Internet Address Management", which summarised the discussions which had taken place, stated the principles essential to responsible address space management, and proposed establishing a "Number Resource Registry Organization".

Subsequent discussions between ICANN and the joint RIR boards have since canvassed the concerns and views of all parties. It is hoped that in 2003, further talks will produce a final set of agreements governing both the ASO and the individual relationships between ICANN and the RIRs.

More details of the joint-RIR statements and other ICANN developments are available at:
http://www.apnic.net/community/icann

Address Council election APNIC 14

At the open Address Supporting Organization meeting held during APNIC 14 on Thursday 5 September 2002, Mr. Takashi Arano was re-elected as the Asia Pacific region Address Council representative.

The current Asia Pacific representatives on the Address Council are:

- Seung-Min Lee (KR)
- Dr. Kenny S. Huang (TW)
- Takashi Arano (JP)

More details of the Address Council are on the ASO web site at:
http://www.aso.icann.org/

RIR coordination leads to common IPv6 policy

An exhaustive series of meetings and discussions in all of the regional communities culminated in July 2002, with the adoption by all RIRs of a new common IPv6 address policy. The new policy replaced the provisional IPv6 policy launched in 1999 and provides simpler access to IPv6 address space in an effort to stimulate IPv6 deployment. The increase in minimum allocation size to /32, and the recommendation of fixed assignment sizes, is also intended to provide for more efficient routing and network design.

In particular, the efforts of two members of the APNIC community, Takashi Arano and Kosuke Ito, should be recognised. Arano-san and Ito-san traveled to APNIC, RIPE, and ARIN meetings to present status updates and were instrumental in coordinating the global discussions.

The new IPv6 policy document is available at:
http://www.apnic.net/docs

LACNIC recognised as fourth RIR

In 2002, APNIC was pleased to extend a welcome to LACNIC as the fourth RIR. LACNIC achieved full recognition from ICANN in October 2002. LACNIC has an office in Montevideo, Uruguay, with operational facilities in São Paulo, Brazil, and services the entire Latin American and Caribbean Region.

The LACNIC web site is available at:
http://www.lacnic.org

Visiting staff programme - NIRs and RIRs

The established arrangement for NIRs to send staff to the APNIC Secretariat for extended periods continued in 2002. Moo Ho Cheon (KRNIC), Ahmad Alkazimy (APJII), and Shengwei Kuo (TWNIC) all worked with the APNIC hostmaster team as part of this training programme, intended to help increase the consistency of practice and application of policies across the region.

In a related development, APNIC, ARIN, and the RIPE NCC have agreed on a staff exchange programme to allow for more hands-on sharing of operational knowledge across the regions. In 2002, ARIN dispatched Michael O'Neill (technical liaison) and Mohammad Sepehrrad (hostmaster) to the APNIC Secretariat. This programme will continue in the coming year, with APNIC staff also to be dispatched to other RIRs.

APNIC support for regional development grants

In May 2002, APNIC announced that it had joined the International Research Development Centre (IDRC) and the UNDP's Asia Pacific Development Information Programme (APDIP), to establish a joint research and development grant fund. This fund supports small research and development projects related to Internet development in the Asia Pacific region.

The APNIC Member and Stakeholder survey conducted by KPMG in 200 had drawn attention to the need for APNIC to outsource more activities throughout the region and form more cooperative relationships with other institutions. By joining with IDRC and APDIP in this programme, APNIC hopes to encourage research and development in infrastructure management, technical and administrative policy, and Internet resource issues in the Asia Pacific region.

The fund makes small grants of up to US$9,000 and project grants of up to US$30,000, awarded on a competitive basis to institutions in the Asia Pacific region. Because the programme is administered with IDRC funding, all of APNIC's financial contributions go directly to the grants themselves.

PAN is an initiative of the IRDRC to help researchers and communities in the developing world find solutions to their social, economic, and environmental problems.

Full details of the PAN research and development grants programme are available at:
http://www.pan.org.sg/grants

APNIC's representation in global forums

Each year, APNIC's regional interests are represented by its staff participating in technical and policy development meetings. APNIC staff present service and resource status reports and participate in meetings and online discussions relating to address management and related technical activities.

Meetings attended in 2002

Month	Meeting	Location
January	ICT R&D Grants Committee meeting	Singapore
	RIPE 41	Amsterdam, Netherlands
	JANOG	Toyama, Japan
February	NANOG24	Miami, USA
March	APRICOT 2002	Bangkok, Thailand
	53rd IETF	Minneapolis, USA
April	ARIN IX	Las Vegas, US
	RIPE 42	Amsterdam, Netherlands
May	AFRINIC & AFNOG 2002	Lome, Togo
	Global IPv6 Summit & China IPv6 Workshop 2002	Beijing, China
June	NANOG 25	Toronto, Canada
	ICANN Meetings	Bucharest, Romania
July	Global IPv6 Summit	Seoul, Korea
	54th IETF	Yokohama, Japan
September	APIA/APOPS Joint Forum 2002 & APNG Camp	Kitakyushu, Japan
	RIPE 43	Rhodes, Greece
	ICT R&D Meeting	Denpasar, Indonesia
October	ICANN Meetings	Shanghai, China
	NANOG 26 & ARIN X	Eugene, USA
November	APT/PITA Regional ICT workshop	Nadi, Fiji
	LACNIC 3rd Annual Meeting	Mexico City, Mexico
	55th IETF	Atlanta, USA
	Pacific INET 2002 Conference	Nadi, Fiji
December	KIOW (Korea Internet Operation Workshop)	Seoul, Korea
	ICANN 2002 Annual Meeting	Amsterdam, Netherlands

Presentations given by APNIC staff to external organisations are archived at:
http://www.apnic.net/community/presentations

Training services expanded

One of APNIC's most important functions is the training and education of technical personnel in the Asia Pacific region. Strategic recruitment of staff helped to drive significant improvements in APNIC's training services in 2002.

The addition of a new trainer and a training development consultant allowed for the existing course material to be revised, new material to be developed (especially in relation to RPSL, the Routing Registry, and the new Whois software), and for the number of courses to be increased.

In 2002, APNIC training staff presented 23 courses, in 19 cities, to more than 1200 participants. This represents a 33 percent increase in the number of people who benefited from APNIC training over the previous year.

The APNIC training staff are joined by APNIC hostmaster staff in presenting the courses. The presence of the hostmasters helps to ensure the consistency of the procedural details presented and provides the hostmasters with valuable feedback about the issues which may concern or confuse members. Also, because the hostmaster staff have been drawn from many different nationalities, they are often able to add translation and interpretation abilities for some of the courses, which helps to increase the participation rates.

Participants in an APNIC training course in 2002.

As in previous years, several APNIC training courses were held in conjunction with the outreach activities of other organisations, both to add value to the event and to broaden the awareness of address policy issues in this region. In 2003, APNIC held joint outreach sessions with APTLD, MINC, PITA, and APoutreach.

APNIC Training and outreach programme 2002

Month	Location	Related outreach activities
January	Dhaka, Bangladesh	
	Kathmandu, Nepal	
February	Bangkok, Thailand	APRICOT / APNIC Open Policy Meeting
March	Singapore	
April	Mumbai, India	APTLD/MINC
	Bangalore, India	APTLD/MINC
May	Hongkong	
	Zhuhai, China	
June	Melbourne, Australia	
July	Suva, Fiji	PITA
August	Jakarta, Indonesia (2 courses)	
	Chennai, India	
	Colombo, Sri Lanka	
September	Kitakyushu, Japan	APNIC Open Policy Meeting
	Ho Chi Minh City, Vietnam	APoutreach
	Manila, Philippines (2 courses)	
October	Singapore	
	Kuala Lumpur, Malaysia	
November	Beijing, China (2 courses)	NGN conference
December	Wellington, New Zealand	IX workshop

APNIC training courses are frequently held with other outreach activities.

APNIC Open Policy Meetings

Twice per year, the APNIC community has the chance to come together for policy development, decision-making, education, information sharing, and networking – both professional and social. The first Open Policy Meeting of each year is held as a conference track of APRICOT and the second as a standalone meeting.

In 2002, the community met at APNIC 13 in Bangkok, Thailand and APNIC 14 in Kitakyushu, Japan. Training and discussions relating to Whois v3, RPSL, and Internet Exchange Points featured highly on the agendas. APNIC hostmaster staff also conducted their usual consultation sessions, as well as providing a helpdesk to field specific questions on the new Whois v3 service.

APNIC 14, in particular, produced a number of policy developments, which are described in detail in "Policy developments" (p.13).

Meeting attendance in 2002

Attendance at APNIC meetings remains relatively stable, although the financial pressures felt by many in the industry may have been a contributing factor to the total figures in 2002.

APNIC meeting attendance in 2002	
APNIC 13	
Total APRICOT attendance	498
AMM attendance	116
APNIC 14	
Total attendance	164
AMM attendance	69

Improving meeting accessibility

Because of the important role that APNIC Open Policy Meetings play in determing the directions and policies of the organisation, it is vital to ensure high levels of participation in the discussions. Unfortunately language difficulties have proved to be a common barrier to full participation.

APNIC 14 in Kitakyushu was the first Open Policy Meeting to use simultaneous interpretation, with equipment and Japanese-to-English interpreters provided by local hosts, JPNIC. The use of interpreters noticeably increased the amount of participation and helped to produce clearer communications, for the benefit of all participants.

The APNIC Secretariat has since acquired interpretation equipment to be used at future meetings and members will be invited to take advantage of this equipment by providing their own interpreters.

Simultaneous interpretation was used for the first time at APNIC 14 in Japan.

Another innovation at APNIC 14 was the use of a "rapporteur" to assist in important policy sessions by displaying live summaries of the discussion issues on a screen at the front of the room. Again, it was generally expressed that the rapporteur was valuable, making clear, especially for those who have difficulty with spoken English, exactly what was being discussed and voted on. The rapporteur will be used in future APNIC meetings. In 2003, APNIC will investigate the use of professional stenographers to display real-time transcripts of the discussions both in the meeting room and, potentially, live over the Internet.

Live video multicasting also made its debut at the Kitakyushu meeting. It has always been recognised that only a limited number of the members can attend any particular Open Policy Meeting. Therefore, the APNIC Secretariat has sought ways to increase the amount of meeting information accessible to those who cannot attend. The usefulness of the multicast was clear at APNIC 14, and equipment has now been purchased by the Secretariat for use at future meetings.

Next APNIC Open Policy Meetings

APNIC 15 will be held as a conference track of APRICOT 2003, in Taipei, Taiwan, from 24-28 February 2003. At the time of publication, the EC was evaluating proposals to host APNIC 16 in the third quarter of 2003.

All APNIC Open Policy Meeting information, including archives of past meetings, is available at:
http://www.apnic.net/meetings

Policy developments

The policy development process

APNIC's policies are developed by the membership and the broader Internet community through a bottom-up process of consultation and consensus. The elements of the policy development process are the face-to-face APNIC Open Policy Meetings which are held twice per year and which are complemented by mailing list discussions.

Anyone may attend the meetings and participate in discussions and the decision making. The Open Policy Meetings comprise many different elements, but core to the policy development process are the Special Interest Groups (SIGs) and the APNIC Member Meeting (AMM). At the SIG meetings, and throughout the year on the associated mailing lists, policy is created and refined through discussion and consensus-based decision making. Participants at the Member Meeting are asked to endorse the policy outcomes of the SIGs.

APNIC Special Interest Groups (SIGs) in 2002

SIG	Chair
Address Policy	Takashi Arano
Database	Xing Li
DNS	Paul Gampe
IX	Philip Smith
Routing	Philip Smith
IPv6 Technical	Jun Murai

More details on the policy development process are available at:
http://www.apnic.net/docs/policy/dev

Major policy decisions

APNIC 13 in Bangkok produced the final consensus in the development of a new IPv6 address policy, as described earlier. APNIC 13 also finalised the outstanding issues relating to the IPv4 allocation guidelines originally proposed by the Broadband Working Group.

Common global IPv6 address policy

The new IPv6 address policy, which has now been accepted as a common policy by the communities of APNIC, ARIN, and RIPE, has simplified the allocation criteria and increased the minimum allocation to /32. In addition, other features of the new policy are:

- Initial allocations greater than the minimum allocation are available, where justified;
- Existing IPv4 infrastructure can be taken into account in evaluating requests;
- Clearer definitions of terms such as "end site" and "utilisation";
- Use of the HD ratio to measure assignment efficiency.

A general principle of APNIC's fee schedule is that that members holding a minimum allocation should only be assessed as being in the Small membership tier. Accordingly, the fee structure was modified to take account of the minimum allocation specified by the new IPv6 policy.

IPv4 registration policy and allocation guidelines

Although most of the recommendations of the Broadband Working Group were implemented following APNIC 12, several issues remained outstanding. At APNIC 13, those issues were discussed again.

The areas of consensus were that:

- Customer lists could still be used to justify IPv4 requests for cable networks, but they would not be mandatory;
- Full justification would be required for requests based on assignment ratios of greater than one address per end-user;
- Network assignments of /29 or above must be registered.

More details on the policy decisions made at APNIC 13 are available at:
http://www.apnic.net/meetings/13/results

APNIC 14 was the site for a great deal of policy discussion, both refining existing documents and developing new and innovative policies. The major decisions were:

Management of Autonomous System Numbers (ASNs)

A new document regarding the management of ASNs was approved at APNIC 14. The new policy now distinguishes between ASNs that are applied for directly by the user, and those that are applied for on behalf of a downstream customer. In the latter case, the ASN will be assigned on a non-portable basis, meaning that the customer must return the ASN if it leaves the service provider who made the initial application. This framework ensures a greater level of accountability and resource management.

Experimental allocations

The APNIC community has agreed that research and experimentation is necessary and benefits the entire community. This new policy allows for experimenters to receive numbering resources at low cost, on a temporary basis, to be used as part of their experiments. The experiments must be recognised as such by the technical community and the experimenters are obliged to make full public disclosure of the nature of the experiment and the results.

New policies for NIRs

As noted in "Developments in NIR membership", the hard work of the NIRs and the APNIC Secretariat culminated in the publication of two important new documents.

Criteria for the recognition of new NIRs in the APNIC region re-opens the NIR membership category and provides clear criteria for organisations wishing to join the NIR community. These criteria include technical expertise, financial management, neutrality, and government endorsement. In 2003, the EC will start considering applications from prospective NIRs.

Operational policies for National Internet Registries in the APNIC region describes the operational procedures for resource allocation by APNIC to NIRs and NIR Members. It is intended to ensure consistent practice and efficient address management across the region and to promote aggregation of routing information. This document does not describe address management policies. All NIRs comply with the regional policies established by APNIC, though they may establish specific additional policies.

Assignments for critical infrastructure

APNIC policy now specifically recognises the needs of "critical Internet infrastructure", namely root domain name system (DNS) servers, global top level domain (gTLD) servers, country code top level domain (ccTLD) servers, IANA, RIRs, and NIRs. The assignments are only available for the actual infrastructure performing those functions.

Changes to IPv4 and IPv6 policies now allow for portable assignments to be made directly to the operators of critical infrastructure (/24 in IPv4, /32 in IPv6).

IPv6 address range for documentation purposes

Technical authors need to include address ranges in examples in their network documentation. To avoid the disruption that could be caused by people attempting to use those examples literally, it is desirable to specifically reserve a range of addresses. Such a range already existed in IPv4, but none had been specified in IPv6.

At APNIC 14, there was consensus to nominate a range for safe use in technical documentation and APNIC has now announced that the range 2001:0DB8::/32 can be used for this purpose. The range may be used freely in technical documentation, by any author, in any part of the world.

IPv4 sub-allocation by LIRs

Previously, APNIC's IPv4 policy only allowed for LIRs to assign address space to their customers. At APNIC 14, the community gave formal recognition to a practice that had already existed informally, namely LIR sub-allocations. The modified IPv4 policy recognises that many LIRs have customers operating as ISPs, who need address space to make assignments to their own customers. By formalising this practice, the modified policy now provides more adequate registration of sub-allocations and, therefore, better management of the resources.

IPv6 assignments to Internet Exchange Points

The existing IPv6 IXP assignment policy was modified to bring the assignment size into line with that in the other regions. The IPv6 assignments made to IXPs have now been increased from /64 to /48.

MAIL-FROM authentication no longer supported

APNIC 14 also produced consensus on a procedural decision to no longer allow the use of MAIL-FROM authentication in Whois database updates. APNIC staff contacted all users of MAIL-FROM to explain the changes, which took full effect from mid-December 2002. To ensure better security, the APNIC Whois database now supports only CRYPT-PW and PGPKEY authentication methods.

More details on the policy decisions made at APNIC 14 are available at:
http://www.apnic.net/meetings/14/report.html

Infrastructure development and major projects

In 2002, APNIC staff continued to develop technical infrastructure for more resilient, expanded external services and a more efficient and secure Secretariat network.

Service distribution

APNIC continues to pursue a strategy of distributed service infrastructure. In 2002, APNIC staff, with the assistance of staff from the WIDE Project and Cisco, upgraded the equipment hosted at the WIDE/NSPIXP2 facility in Otemachi, Tokyo. This upgrade improved service availability and complemented other engineering work conducted at the APNIC Secretariat office to boost reliability and effective load distribution.

APNIC now operates multihomed services at this regional location, including DNS and failover email services. APNIC staff have also begun preparing for regional distribution of other services, including Whois and web serving. In 2003, APNIC staff will commence installation of equipment at hosting locations in other parts of the region, including the first POP deployment, which is to be located at HKIX (Hong Kong Internet Exchange).

Whois v3

Whois v3 uses RIPE version 3 software, incorporating RPSL.

In early 2002, APNIC technical staff installed the new RIPE v3 software on the recently upgraded whois servers. Whois v3 was then made available as a public test database on 1 July. Following a successful testing period (accompanied by new documentation and training material), APNIC's official Whois services moved to the new platform on 20 August 2002.

Despite the magnitude of the data migration, the APNIC Secretariat was pleased to report that the upgrade was completed with no disruption to regular Whois services, apart from a one hour freeze on updates.

Throughout 2002, the APNIC Secretariat regularly published information on the web site and in *Apster*, raising awareness of the upgrade and providing details of specific changes in the new version. Whois v3 was also a major focus of APNIC's training programme in 2002, with new course material prepared, a quick reference card distributed, and a Whois v3 helpdesk staffed at APNIC 14.

More details about the APNIC Routing Registry are available at:
http://www.apnic.net/db/whois-v3-facts.html

Routing registry

Whois v3 uses Routing Policy Specification Language (RPSL) enabling the incorporation of routing registry functionality. With the introduction of Whois v3, APNIC also launched the trial Asia Pacific Internet Routing Registry (APIRR).

An Internet Routing Registry (IRR) contains announced routes and routing policy in a common format that networks can use to configure their backbone routers. An IRR provides a number of benefits to the Internet community, including route filtering, network troubleshooting, router configuration, and a global view of Internet routing.

The APIRR trial finished on 17 December 2002, with all data transferred to the new permanent service launched that day, the APNIC Routing Registry.

More details about the APNIC Routing Registry are available at:
http://www.apnic.net/services/apnic-rr-guide.html

F-Root deployment

In November 2002, APNIC announced a new project to establish a number of new root server sites into the Asia Pacific region. The sites are funded by APNIC but operated by the Internet Software Consortium (ISC), as mirror copies of the ISC's F-Root server.

These copies will be announced into the Internet routing system using the "BGP anycast" technique, which will ensure that traffic from any location to the F-Root is directed to the nearest server site.

The sites which are supported will be fully operational root server sites, however this initiative is currently a trial project for APNIC. The Internet community in this region has often expressed interest in APNIC becoming involved in root server operations in the interests of a more stable and accessible DNS infrastructure in this region.

It will be necessary to carefully monitor the cost and effectiveness of the root server activity. This will be done over the coming year, while at the same time the benefits of this development should be experienced by many in the region.

At the time of publication, initial sites for new root servers in the region were under negotiation. APNIC will make announcements of any activity in this area in 2003.

More details about the APNIC Routing Registry are available at:
http://www.apnic.net/services/rootserver

Secretariat infrastructure and systems

In addition to the major projects described above, APNIC's technical services staff worked hard throughout 2002 to achieve many significant improvements in internal Secretariat infrastructure, including:

- Software development to provide internal tools and systems for data administration and events management;
- Deployment of RT2 request tracking software for internal and external request queues;
- Establishment of an additional high speed Internet link for increased resilience;
- Implementation of virus scanning and spam tagging on all inbound mail;
- Deployment of an office virtual private network (VPN) to provide better, more secured access for staff working remotely;
- Increased use of certificates for external and internal services.

MyAPNIC

At APNIC 14 in September 2002, APNIC launched version 1.0 of MyAPNIC, the web-interface secured by certificates, designed to allow account-holders to access private information and invoke specific APNIC services.

MyAPNIC had been in public testing since the beta launch at APNIC 13. The public release of the first full version was read-only, allowing views of resource status, billing details, and administrative information. This strategy was chosen to ensure full security of the system before enabling the more advanced features.

The next version of MyAPNIC, which will be demonstrated at APNIC 15, will provide users with the ability to update whois records, billing contacts, and other administrative information. It will also include features to allow for secure electronic voting.

MyAPNIC version 1.1 will allow members to edit their administrative details and whois objects.

Communication developments

Documentation developments

Whois database documentation upgrades

The implementation of the Whois v3 database brought with it a need for a complete review of APNIC's database documentation, including an upgrade guide, detailed help for updating the Whois database, an overview of RPSL and routing registry operation, and a quick reference card that was sent to all members.

Policy and request form development

The full suite of policy changes that was achieved by the membership in 2002 is detailed in "Major policy decisions" (p. 14). These changes required a considerable amount of updating to existing APNIC documents and the creation of new ones, as well as the development of new request forms, FAQs, and help guides. At the time of publication, several new online forms were nearing completion, designed to provide easier request processes for address resources.

Refined document numbering system

The document numbering scheme used on APNIC documents was modified in 2002 to allow better identification of document versions and easier tracking of policies.

Translation

The translation of APNIC policy documentation continued in 2002, with assistance from NIRs to produce updated versions of the primary IPv4 address policy document. Efforts are now underway to translate the new and updated policy documents that followed the decisions of APNIC 14.

Apster

Apster publishes, news, policy updates, event claendars, and technical articles from Internet specialists.

First launched in 2001, *Apster* is APNIC's quarterly newsletter to members and the broader Internet community. *Apster* aims to educate, inform, and to represent the interests of the Internet community in the Asia Pacific region.

In 2002, Apster covered a very broad range of topics related to policy and operational developments, giving particular focus to:

- Network abuse, with detailed reports of concrete anti-abuse measures being taken by some governments and NIRs in the region;
- IPv6 status, including an overview of the new common global IPv6 policy and discussions of the ways in which IPv6 implementation may change current perceptions of the Internet;
- RPSL, the Routing Policy Specification Language that is at the heart of the new version of the Whois database and which enables Internet routing registries; and
- The APNIC Routing Registry, launched at the end of 2002, after extensive testing, development, and education throughout the year.

All APNIC members are automatically subscribed to Apster. *Other interested parties may join the APNIC subscription list, or download electronic copies from:*
http://www.apnic.net/apster

The year ahead - APNIC's 10 year anniversary approaches

Many of the projects and activities described in this report will continue into 2003 and beyond. But with the rapid change and development that takes place in this industry, it can be easy to lose a normal perspective of time. So it may come as surprise to many that APNIC marks its tenth anniversary in 2003.

On 13 January 1993, Jun Murai and Masaki Hirabaru from WIDE Project/JNIC presented a proposal for "APNIC experiments" at the APCCIRN meeting in Waikiki, Honolulu. And on 13 December that same year, the first APNIC Director General, David Conrad, presented an APNIC midterm status report at APCCIRN/APEPG meeting in Taipei, Taiwan.

Of course much has happened since then and a strong and active community has grown under the banner of APNIC. On behalf of that community, the APNIC Secretariat extends its warmest thanks to all of those who have helped APNIC grow and prosper in these ten years.

Resource status

Early registration transfer (ERX) project

When ARIN was formed in December 1997, it inherited the InterNIC database of existing IP addresses and AS numbers. The records in this database became known as "early registrations" and discussions regarding their management have taken place among the RIRs and their communities for some time.

On ARIN's request, the RIRs agreed to transfer the management of the resources to the RIR for the region in which the resource holders reside. This has become know as the "Early Registration Transfer" (ERX) project.

On 1 August 2002, ARIN transferred all early registration ASNs to APNIC as the first stage of the ERX project. All relevant resource holders were notified in advance and at the time of the transfer.

ASNs transferred to APNIC under the ERX project, August 2002

173	2042	2756	3391	3608	3775	3976	4197	4528	6163
681	2144	2764	3395	3661	3784	4007	4202	4538	6262
1233	2385	2772	3460	3662	3786	4040	4251	4594	6619
1237	2537	2823	3462	3689-3693	3787	4049	4274	4605	6648
1250	2554	2907	3488	3711	3813	4058	4352	4961	7131
1659	2563	2915	3510	3717	3825	4060	4381	5017-5018	7175
1704	2569	2925	3550	3747	3836	4134	4382	5051	7855
1768	2570	2926	3558	3748	3839	4142	4431	5085	7901
1769	2697	3357	3559	3757	3840	4158	4433	5087	10807
1781	2706	3363	3583	3758	3929	4174	4434	5709	11467
1851	2713	3382	3605	3773	3969	4175	4515	6068	19705

Subsequently, in December 2002, the first transfers of IPv4 address space took place. This transfer involved nine /16 address ranges from within 129.0.0.0/8.

IPv4 address ranges transferred to APNIC under the ERX project, December 2002

129.60.0.0/16	129.78.0.0/16	129.94.0.0/16
129.96.0.0/16	129.127.0.0/16	129.136.0.0/16
129.180.0.0/16	129.249.0.0/16	129.254.0.0/16

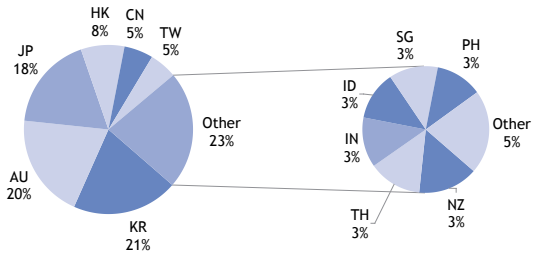
Again, registered contacts were notified of the progress of the transfer. All transfers to date have proceeded without technical difficulty. In cases where administrative issues have arisen, these are dealt with through normal hostmaster procedures.

Full details of the ERX project, including lists of all resources affected, are at:
http://www.apnic.net/db/erx

AS numbers

APNIC currently administers the following ranges of ASNs: 4608-4863, 7467-7722, 9216-10239, 17408-18431, 23552-24575. Demand for ASNs remains relatively constant and the distribution of ASNs among economies in the region has not changed significantly since the previous Annual Report.

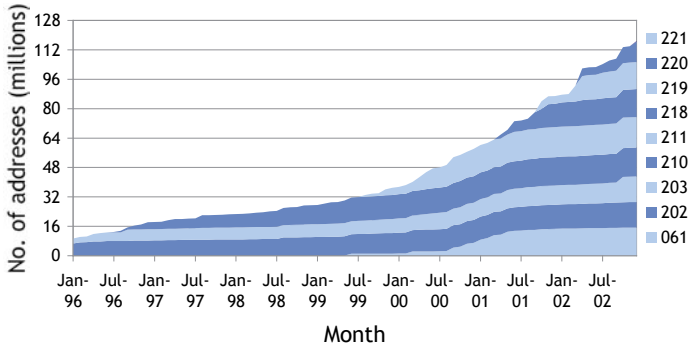
Total distribution of ASN allocations, by economy



IPv4 address space

Network deployment rates remained strong in 2002, despite the difficult financial conditions reflected in the slow membership growth rate. Although the rate of growth in demand for IPv4 address space in the Asia Pacific region slowed, the total amount of new allocations was the highest ever.

Total IPv4 allocations (cumulative, by /8 range)



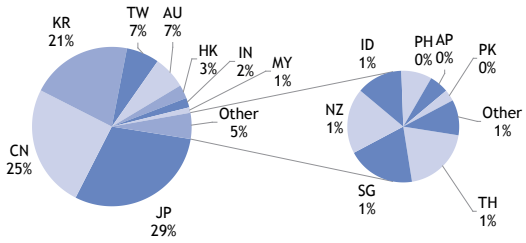
APNIC received the IPv4 address range 221/8 from IANA on 3rd of July 2002.

IPv4 address space, allocated and free

/8 ranges	Allocated	Total	% Allocated	% Free
061	15265792	16777216	90.99%	9.01%
202	13940480	16777216	83.09%	16.91%
203	13889536	16777216	82.79%	17.21%
210	15767552	16777216	93.98%	6.02%
211	16564224	16777216	98.73%	1.27%
218	15188992	16777216	90.53%	9.47%
219	14761728	16777216	87.99%	12.01%
220	11190016	16777216	66.70%	33.30%
221	229376	16777216	1.37%	98.63%
Totals	**116797696**	**150994944**	**77.35%**	**22.65%**

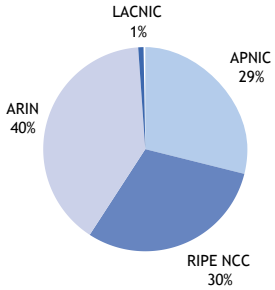
The relative distribution of IPv4 address space throughout the Asia Pacific region remains virtually unchanged since the last Annual Report.

Total distribution of IPv4 allocations, by economy



APNIC is now allocating IPv4 address space at a faster rate than the other RIRs. APNIC's total IPv4 allocations are now almost level with the those of RIPE NCC.

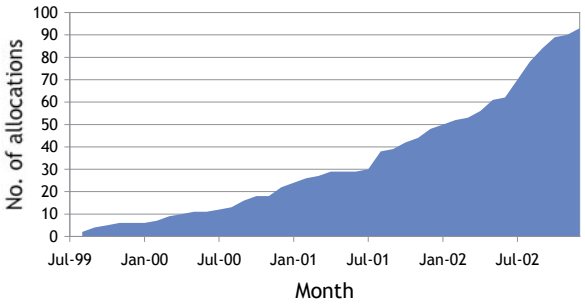
Total global distribution of IPv4, by RIR



IPv6 address space

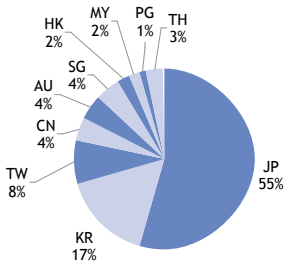
As expected, the introduction of the relaxed entry criteria in the new IPv6 policy in mid-2002 brought an increase in the number of IPv6 requests.

Total IPv6 allocations (cumulative)



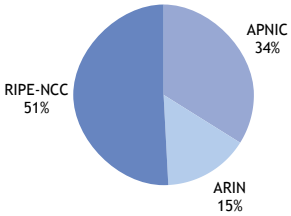
Japan continues to be a leader in IPv6 deployment, with Korea and Taiwan also holding significant numbers of IPv6 allocations.

Total distribution of IPv6 allocations, by economy



The increase in demand has, however, been more marked in the RIPE region than in the APNIC region. Demand in the ARIN region remains relatively low.

Total global distribution of IPv6, by RIR



As part of the policy, existing holders of /35 allocations are able to upgrade to the new /32 allocation. At the time of publication, 38 of the 61 eligible IPv6 holders had taken up this option.

Discussions are now undwerway in the IETF to plan the phase out of the 6bone project. 6bone is the IPv6 Testbed network established in 1996 to enable IPv6 testing and experimentation. Under the plan, the exisiting 6bone address space will be transferred to the relevant RIRs.

Reverse delegations

APNIC maintains an automatic zone file generation system to support its reverse delegation services. By the end of 2001, the status of this service was as follows:

- 43,729 domains in in-addr.arpa;
- 32 domains in ip6.arpa;
- 53 domains in ip6.int.

On 1 August 2002, the APNIC Secretariat announced the decision that ip6.int will be phased out in favour of ip6.arpa.

DNS queries served by APNIC DNS servers in 2002 averaged 1,100 queries per second, with additional load shared between the other RIRs, who also list APNIC domains.

Financial reports

Consolidated statement of financial position

	Year end 2002 (US$)	Year end 2001 (US$)	% change from 2001
Exchange rate (*)	*0.5676*	*0.5111*	*11.1%*
Current assets			
Cash	4,020,203	3,648,195	10%
Receivables	287,522	305,820	-6%
Advance payment	22,439	15,015	49%
Other	118,977	35,283	237%
Total current assets	4,449,141	4,004,313	11%
Non-current assets			
Investment	359,275	390,984	-8%
Property, plant, and equipment	703,600	471,817	49%
Bank guarantees/Long-term deposits	1,222,543	559,292	119%
Total non-current assets	2,285,418	1,422,093	61%
Total assets	**6,734,559**	**5,426,406**	**24%**
Current liabilities			
Accrued expenses	273,425	292,840	-7%
GST withholding	9,511	6,195	54%
Provisions	106,590	169,918	-37%
Unearned revenue	1,653,192	1,471,041	12%
Total liabilities	2,042,718	1,939,994	5%
Equity			
Share capital	0.57	1.51	-62%
Retained earnings	4,691,841	3,486,410	35%
Total equity	4,691,841	3,486,412	35%
Total liabilities & equity	**6,734,559**	**5,426,406**	**24%**

Notes:

The consolidated statement of financial position, activities and cashflows are APNIC Pty Ltd translated into US$ (2001: consolidation of APNIC Pty Ltd and APNIC Ltd).

For a better understanding of APNIC Pty Ltd's financial position and performance, as represented by the results of its operations and its cashflows for the financial year ended 31 December 2002, the consolidated statement of financial position, activities, and cashflows should be read in conjunction with the annual statutory financial report and the audit report contained therein.

The amounts in this APNIC financial report are expressed in US$. The exchange rate used to convert AU$ amounts to US$ in this report (0.5676), is based on the notes spot rate as at 31 December 2002 as provided by the Australian Taxation Office.

Consolidated statement of activities

	2002 in US$	2001 in US$	% change from 2001
Exchange rate (*)	0.5468	0.5179	6%
Revenue			
Membership fees	2,871,723	2,472,532	16%
Per allocation fees	422,534	527,567	-20%
Non-member fees	66,105	37,037	78%
Start-up fees	0	135,104	-100%
IP Resource application fees	293,459	17,297	1597%
Sundry income	20,674	92,181	-78%
Interest received	139,992	153,764	-9%
Exchange rate gain/(loss)	(218,710)	185,305	-218%
Total revenue	**3,595,777**	**3,620,787**	**-1%**
Expenditure			
ICANN contract fees	123,245	92,949	33%
Donation, contribution, and sponsorship	41,244	31,150	32%
Communication expenses	89,036	44,960	98%
Membership fees	63,896	63,260	1%
Professional fees	190,955	140,661	36%
Meeting and training expenses	63,299	52,088	22%
Rent	123,364	103,418	19%
Salaries	1,208,400	1,012,736	19%
Other operating expenses	787,816	627,057	26%
Depreciation expense	114,491	66,334	73%
Total expenditure	**2,805,746**	**2,234,613**	**26%**
Operating surplus/(loss)	**790,031**	**1,386,174**	**-43%**

Notes:

* The exchange rate used to convert AU$ amounts to US$ in this report (0.5468), is based on the average monthly average rate for year 2002 as provided by the Australian Taxation Office (2001: December 2001 monthly average rate).

Consolidated statement of cashflows

For the year ended 31 December 2002

	2002 (US$)	2001 (US$)
Cash flows from operating activities		
Receipts from members and customers	3,489,849	3,432,323
Payments to suppliers and employees	(2,593,543)	(1,829,253)
	896,306	1,603,070
Interest received	124,227	185,305
Net cash inflow from operating activities	**1,020,533**	**1,788,375**
Cash flows from investing activities		
Payments for investment, long term deposits	(631,542)	(533,921)
Payments for equipment/furniture/office improvement	(341,898)	(266,845)
Net cash outflow from investing activities	(973,440)	(800,766)
Net increase in cash held	**47,093**	**987,609**
Cash at the beginning of the financial year	3,648,195	2,820,996
Effects of exchange rate changes on cash	324,915	(160,410)
Cash reserve at the end of the financial year	**4,020,203**	**3,648,195**