Asia Pacific Network Information Center, Ltd.

1997 Annual Report

Prepared for the Membership of the
Asia Pacific Network Information Center

By

The APNIC Secretariat

David Conrad, Director General
Yoshiko Okazaki Chong, Hostmaster
Kyoko Day, Business Manager

Introduction

1997 has been a year of very significant change within APNIC. The Asia Pacific Network Information Center has grown by 75% in terms of membership during the last year and over 30% in terms of resources allocated. This report characterizes this growth and details APNIC's responses in light of the additional requirements imposed by its rapid expansion.

The first section of this report will present APNIC's "Vital Statistics", namely its current operating environment and parameters. With APNIC's current situation detailed, APNIC's financial status as of December 31, 1997 will be presented. Next, APNIC's resource allocation activities, including the allocation of Internet addresses and autonomous system numbers will be described, followed by a discussion of the secondary activities APNIC has been involved in over the past year. APNIC's future directions and the challenges it faces will then be presented and finally, some conclusions will be drawn.

This report is submitted to the APNIC membership in order to provide the information necessary to make informed decisions on the future directions APNIC will take. Should there be any questions or comments, they can be sent via electronic mail to hostmaster@apnic.net.

APNIC Vital Statistics

APNIC is a non-profit registry organization operating on a cost recovery basis with the following objectives:

- to provide the service of allocating and registering Internet resources for the purpose of enabling communications via open system network protocols and to assist in the development and growth of the Internet in the Asia and Pacific Rim region;
- to assist the Asia and Pacific Rim Internet community in the development of procedures, mechanisms, and standards to efficiently allocate Internet resources as a service to the community as a whole;
- to provide educational opportunities to further Members' technical and policy understanding of the industry;
- to develop public policies and public positions in the best interest of the Members and to seek legislative and regulatory consideration of issues of general benefit to the Members, where and when appropriate;
- to serve as the administrative, managerial and operations arm of APNIC, Ltd. ("the corporation"), and to transact all activities, functions and affairs on behalf, and in the name, of the corporation.

In order to fulfill these objectives, APNIC is comprised of:

- Members, who are the governing body of APNIC;
- the Executive Council, which acts on behalf of APNIC;
- the Secretariat, headed by a Director General

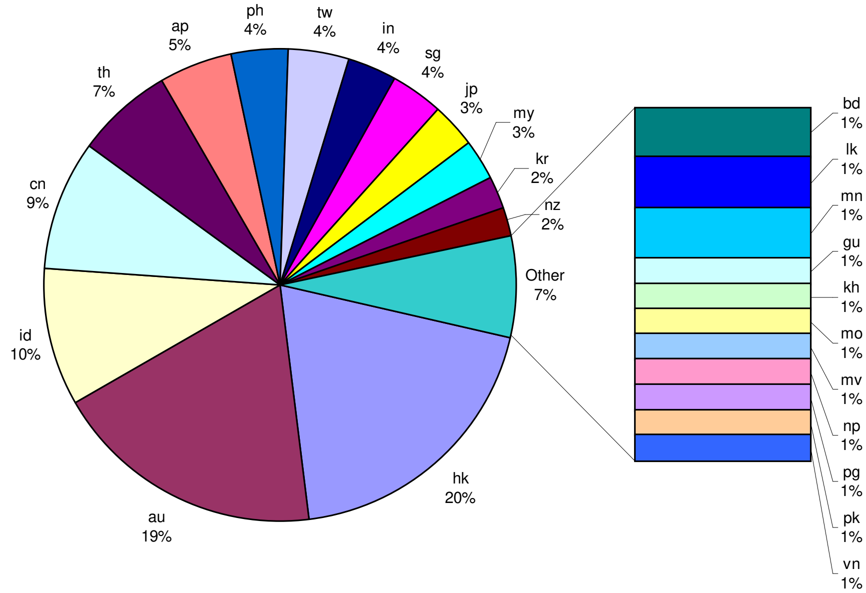
This section will describe APNIC's current status in terms of this structure.

APNIC Membership Status

APNIC is explicitly a member based and directed organization, with the membership acting as the governing body of APNIC and a legal structure, APNIC, Ltd. acting only in support of APNIC. Membership is open to any organization operating in any of the following countries or territories:

Afghanistan	American Samoa	Australia	Bangladesh	Bhutan
Brunei Darussalam	Cambodia	China	Cocos Islands	Cook Islands
East Timor	Fiji	French Polynesia	Guam	Hong Kong
India	Indonesia	Japan	Kiribati	Laos
Macau	Malaysia	Maldives	Marshall Islands	Mongolia
Mauritius	Myanmar (Burma)	Nauru	Nepal	New Caledonia
New Zealand	Niue	Norfolk Island	North Korea	Pakistan
Papua New Guinea	Palau	Pitcairn	Singapore	Solomon Islands
South Korea	Sri Lanka	Taiwan	Thailand	The Philippines
Tonga	Tuvalu	Vanuatu	Vietnam	Western Samoa

Of these countries Afghanistan, American Samoa, Bhutan, Cocos Islands, Cook Islands, East Timor, Kiribati, Niue, North Korea, Palau, Pitcairn, and Tuvalu have yet to establish contact and/or at least one member with APNIC as of December 31, 1997. By country, APNIC's membership distribution can be seen in the following graph:



Membership Tiers

APNIC membership in 1997 was comprised of three "size" based tiers, "large", "medium", and "small" members. As the categorization of size of organizations can be controversial (e.g., what is measured?), APNIC allows organizations to determine their own size and thus their tier of membership. As of December 31, 1997, APNIC's membership was composed of:

Self-determined "Size" Tier	***Number of Members***
Large	20
Medium	30
Small	150
Total	200

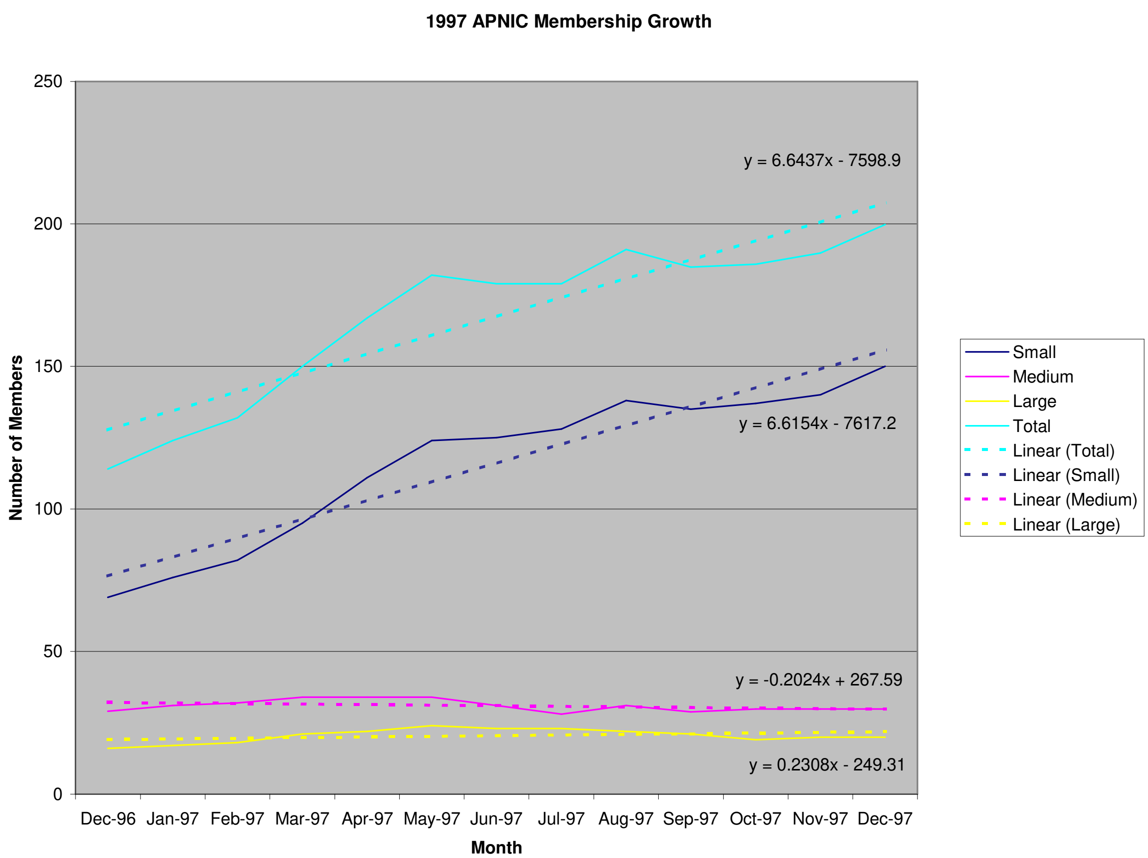
A full listing of the current APNIC membership as of December 31, 1997 can be found in Appendix A.

Membership Growth Trends

As mentioned previously, APNIC has experienced significant growth in membership over the last year, increasing from 114 members to 200 members, an increase of 75%. Broken down by tiers, the growth rates for 1997 membership figures were:

Self-determined "Size" Tier	*Number of New Members*	*1997 Growth Rate*
Large	4	25%
Medium	1	3%
Small	81	117%
Total	86	75%

The growth over time can be seen in the graph below. Included in this graph are growth projections derived by linear regression and the equations of those lines. As can be seen, APNIC has been receiving (on average) approximately 7 new members per month, however the vast majority of those new members are classifying themselves as "small" and it should be noted that the linear projection of the growth of medium members is actually negative.



These membership figures are for all APNIC members, both regular and confederation members. Confederations are members composed of some number of autonomous sub-entities (called the confederation members) that are treated independently with respect to resource allocations, e.g., downstream service providers, geographically partitioned areas within a single service provider, national NICs serving service providers within a country, etc. At the end of 1997, APNIC had a total of 10 confederations, with the following distribution:

Self-determined "size" Tier	*Number of Confederations*
Large	7
Medium	2
Small	1

The number of individual members these confederations have is not available at this time, however efforts are underway to establish each confederation's membership as a result of the decision to assess per-confederation-member fees at the Kuala Lumpur APNIC meeting in July, 1997.

APNIC Executive Council

The APNIC Executive is elected by and acts on behalf of the APNIC membership. The main functions of the Executive Council are:

- to act on behalf of the Members in the interval between Annual General Meetings within the limits of the powers delegated to it by the Members;
- to manage the activities, functions and affairs of APNIC and the corporation;
- to exercise all such powers and do all such acts or things as may be required to be exercised or done by the corporation or the directors of the corporation, subject to the provisions of the Memorandum and Articles of Association of the corporation and to such requirements as may be prescribed by a resolution of the directors of the corporation;
- to take all steps to facilitate and implement the decisions of the Members at Annual General Meetings and, where appropriate, of the decisions of other meetings of APNIC;
- to consider broad Internet policy issues in order to ensure that APNIC's policies and strategies fully respond to the constantly changing Internet environment;
- to ensure the efficient coordination of the work of APNIC;
- to establish the basis for the budget of APNIC and determine a ceiling for the expenditure of APNIC until the next Annual General Meeting after considering all relevant aspects of the work of APNIC in that period;
- to provide any general directives dealing with the staffing of APNIC and, if necessary, fix the basic salaries, the salary scales and the system of allowances and pensions, if any, for all employees of APNIC;
- to elect the Director General.

At the APNIC meeting held in Hong Kong in January 1997, the APNIC membership elected Dr. Xing Li of Tsinghua University, China, and Dr. Srisakdi Charmonman of Assumption University and Internet KSC, Thailand to the APNIC Executive Council. These two individuals replaced Sanjaya of IndoInternet, Indonesia and B. A. C. Abeywardana of Electroteks Network Services, Sri Lanka whose appointed terms of 6 months had expired.

The Executive Council that currently holds office is composed of:

Geoff Huston, Telstra (Australia), Chair
Jun Murai, Keio University, Treasurer
Tommi Chen, Netcentre Pty Ltd., Secretary
Srisakdi Charmonman, Assumption University and Internet KSC, Thailand
Xing Li, Tsinghua University, China

The executive council, which meets prior to APNIC meetings and conducts most business over electronic mail, addressed the following issues in 1997:

- Requests for waivers of APNIC membership fees, one of which was declined, the other still in the process of being decided;
- Whether to become a signatory to the IAHC gTLD Memorandum of Understanding, after which APNIC did become a signatory;

- Whether to allow non-AP region organization to become APNIC members, after which, the geographical restrictions were kept in force;
- How to implement the transition to the Confederation per-member fee plan, after which a five year phase in of the full US $2,000.00 per-confederation-member fees for grand-fathered confederations was agreed upon;
- Discussions on the restructuring of the IANA;
- Whether the Executive Council should make the final decision on whether an organization requesting the xxNIC.NET domain is appropriate for delegation to occur after which the Executive Council agreed that it was their responsibility to make the decision;
- Whether APNIC should permit Access Media International to use the APNIC database to determine network contacts in order to implement a survey of Internet penetration in the Asia and Pacific Rim regions, after which permission was granted;
- Whether the APNIC Secretariat has the legal authority to implement policies without explicit approval of the Executive Council, after which the decision (based on the APNIC By-Laws and Membership agreement) was in the affirmative;
- Whether APNIC should contribute and/or support a survey of national top level domains in the AP region, after which the decision was in the affirmative;
- Whether APNIC should work with the United Nations Development Programme in promoting the deployment of the Internet in the Asia and Pacific Rim regions, after which the decision was in the affirmative;

At the APNIC meeting to be held in Manila, February 1998, three Executive Council seats, namely the seats held by Geoff Huston, Jun Murai and Tommi Chen will be up for election.

APNIC Secretariat

The APNIC Secretariat provides the logistical and administrative support for APNIC, operating as the executive arm to implement the decisions of the APNIC membership and Executive Council.

Staff

The APNIC Secretariat consisted of the following staff in 1997:

Title	*Person*	*Status*
Director General	David Conrad	Full-time
Business Manager	Kyoko Day	Full-time
Hostmaster	Yoshiko Chong	Full-time
Administrative Assistant	Yoshiko Tobata	Full-time (temporary)
Assistant	Natsuko Minamisawa	Part-time (10 hours/week)

The responsibilities for the major positions listed above are:

Director General

- to act as the chief executive officer of APNIC and the corporation;
- to have, subject to the provisions of the by-laws and to the direction of the Executive Council, the responsibility for the general management and control of the activities, functions and affairs of APNIC and the corporation and to perform all duties and have all powers which are commonly incident to the office of chief executive or which are delegated by the Executive Council;
- to execute all contracts, agreements and other instruments of the corporation which are authorized including affixing the Seal of the corporation;
- to appoint and have general supervision and direction of all of the other staff and agents of APNIC and the corporation, including but not limited to bookkeeping, accounting and treasury functions on behalf of the Treasurer;

- to implement strategic policies, prepare plans for APNIC, and to coordinate its activities, functions and affairs;
- to report to the Executive Council and to put forward resolutions for the consideration of the Executive Council;
- to take all the actions required to ensure the economic use of APNIC's resources and to be responsible to the Executive Council for all the administrative and financial aspects of APNIC's activities;
- to act as the legal representative of APNIC and the corporation.
- to act as an ex-officio member of the Executive Council.

Business Manager

- to oversee overall bookkeeping and accounting related record keeping
- to prepare monthly and quarterly financial reports
- to close and adjust APNIC's financial books and assist annual audit
- to reconcile monthly financial statements
- to disburse payroll
- to provide membership information to new and prospective members
- to manage member accounts
- to evaluate overall cost/efficiency of the APNIC Secretariat

Hostmaster

- to receive and process all resource requests
- to review all resource requests, evaluating them for appropriateness and coherence
- to allocate resources according to existing Internet policies
- to register resources in APNIC databases
- to act as the primary liaison between APNIC and the membership on all issues related to the allocation of resources
- to assist in developing policies and procedures for the allocation of resources
- to maintain records of resource allocations and registrations

With the inclusion of the assistant positions, APNIC had 4.25 "full-time-equivalent" positions. In addition, the APNIC Secretariat has contracted out some development work, approximately 1.25 full-time-equivalent positions, for the development of software.

In comparison with APNIC's peers, APNIC's staff to member ratio at the end of 1997 is 36.36 to 1. This may be compared to RIPE-NCC with approximately 900 members and 36 staff (a ratio of 25 to 1) and ARIN with approximately 130 members and 14 staff (a ratio of 9.28 to 1). When comparing hostmaster ratios, APNIC has a hostmaster to member ratio of 200 to 1, whereas RIPE-NCC's ratio is 69.23 to 1 and ARIN's ratio is 21.66 to 1.

Facilities

APNIC is currently located at the following address:

> Tokyo Telecom Center
> East Building, 4th Floor, Mailbox 1017
> 2-35 Aomi, Koto-ku
> Tokyo 135-70
> Japan

The office space at this location is approximately 35 square meters and is provided by the WIDE Project at no cost to APNIC. Within this office, APNIC has the following equipment:

1 Sun Sparcstation 20 workstation running SunOS 4.1.4
1 Sun Sparcstation 5 workstation running SunOS 4.1.4
2 Personal Computers running Microsoft Windows95
1 Personal Computer running Microsoft WindowsNT
2 Personal Computers running Unix
2 Printers (1 laser, 1 color inkjet)
1 Scanner
1 Fax machine
2 Tape drives (1 8mm, 1 6 cartridge DAT)
1 Router

APNIC also maintains a data center co-located with the "Network Service Provider Internet Exchange Point – 2" operated by the WIDE Project (also provided at no cost to APNIC). Within the APNIC co-location space, APNIC maintains:

2 Sun Sparcstation 5 servers running SunOS 4.1.4
2 PCs running Unix
1 Router
1 Access Server

In addition, APNIC owns 3 laptops running Windows95, one Macintosh laptop, and has 5 ISDN routers that provide remote dialup capability for APNIC's staff.

Of the equipment described above, Nippon Telegraph and Telephone have loaned the following to APNIC:

1 Sun Sparcstation 20
1 Sun Sparcstation 5
1 PC
3 ISDN routers

APNIC's data center is connected to the Internet at the NSPIXP-2 via an FDDI connection to a Digital Gigaswitch. APNIC maintains full routing and peers with ISPs at NSPIXP-2, currently receiving a total of approximately 52,000 routes. Transit services are provided by primarily by IIJ, WIDE, KDD. The various service machines located at APNIC's data center are interconnected with 10baseT Ethernet, however the capacity exists to upgrade to 100baseT should it prove necessary.

A WIDE 192 Kbps link between the NSPIXP-2 and a WIDE office situated next door to the APNIC office provides connectivity for the APNIC Secretariat office. In addition to the 192 Kbps link, APNIC has made use of an ISDN line to directly connect to the APNIC data center. Internally within the APNIC Secretariat office, connectivity between machines is provided via 10baseT. Security is provided via an IIJ provided Gauntlet firewall and via ingress and egress filters.

APNIC Financial Status

APNIC operates on a cost-recovery basis as a non-profit organization. As APNIC's income is somewhat variable, particularly given the membership has wide latitude to determine their own fees, the APNIC Executive Council mandated that APNIC maintain a 50% budget surplus, and would thus be able to operate for at least six months in a worst case scenario with no income. The next sections provide a more detailed discussion of APNIC's sources of income and a summary of APNIC's expenses for 1997. A copy of APNIC's audited financial report is included as Appendix B.

Income

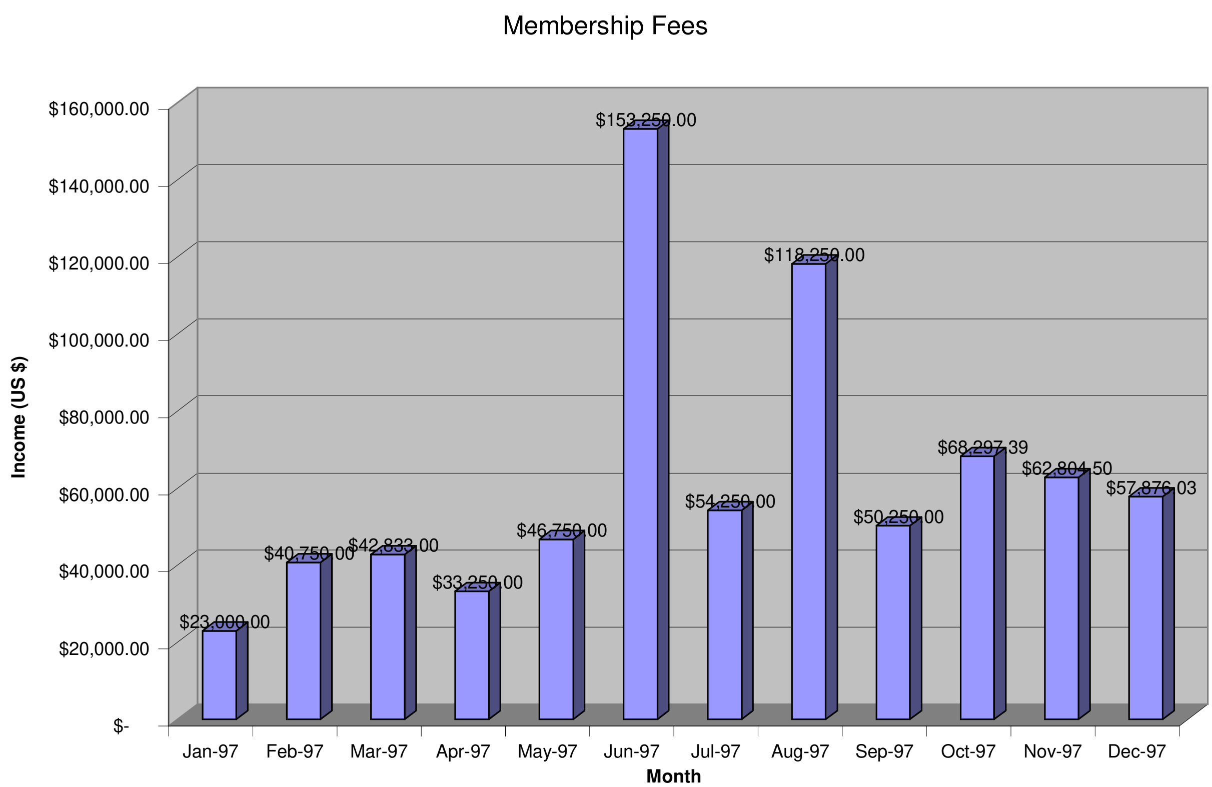
APNIC derives its income from membership fees charged yearly, account creation fees charged once when an organization approaches APNIC for services, fees associated with resource allocation to non-members, fees collected from non-members at APNIC meetings, and interest income earned on the funds residing in APNIC's bank account.

Membership Fees

APNIC's membership fees correspond to the self-determined size category chosen by the member and provided APNIC 86.11% of APNIC's 1997 income. For 1997, the APNIC membership fees were:

Self-determined "size" Tier	***Recurrent Annual Fee***
Large	US $10,000
Medium	US $5,000
Small	US $2,500

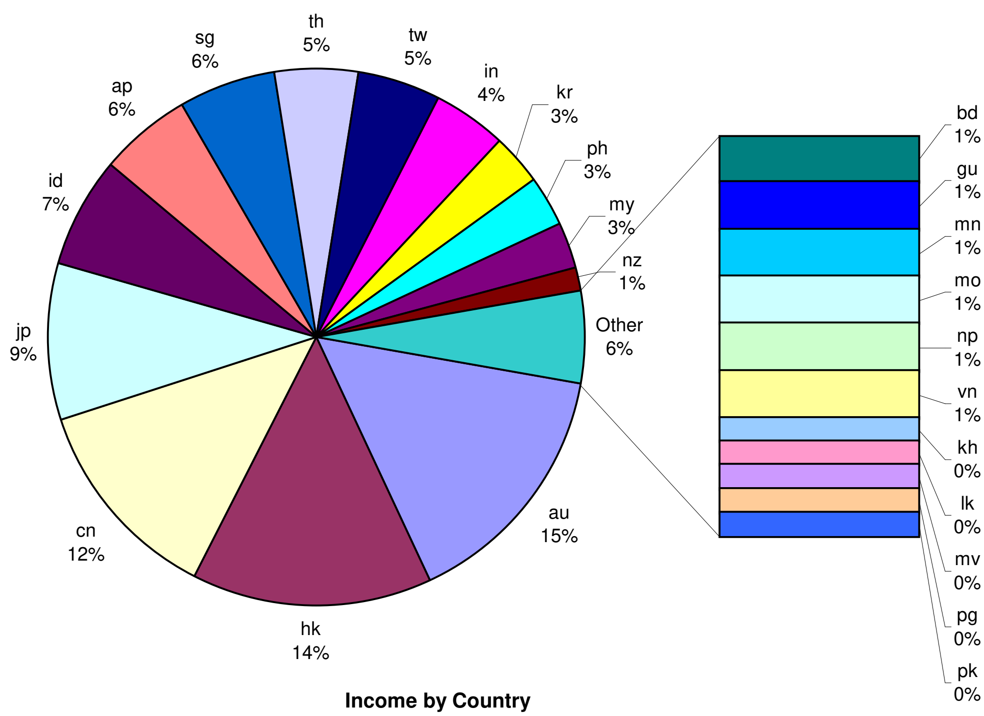
Income from membership fees for 1997 was US $751,560.92 or 86.11% of APNIC's total income, with a monthly average income of US $62,630.08. A graphical representation of the monthly total income from membership fees through 1997 is provided below:



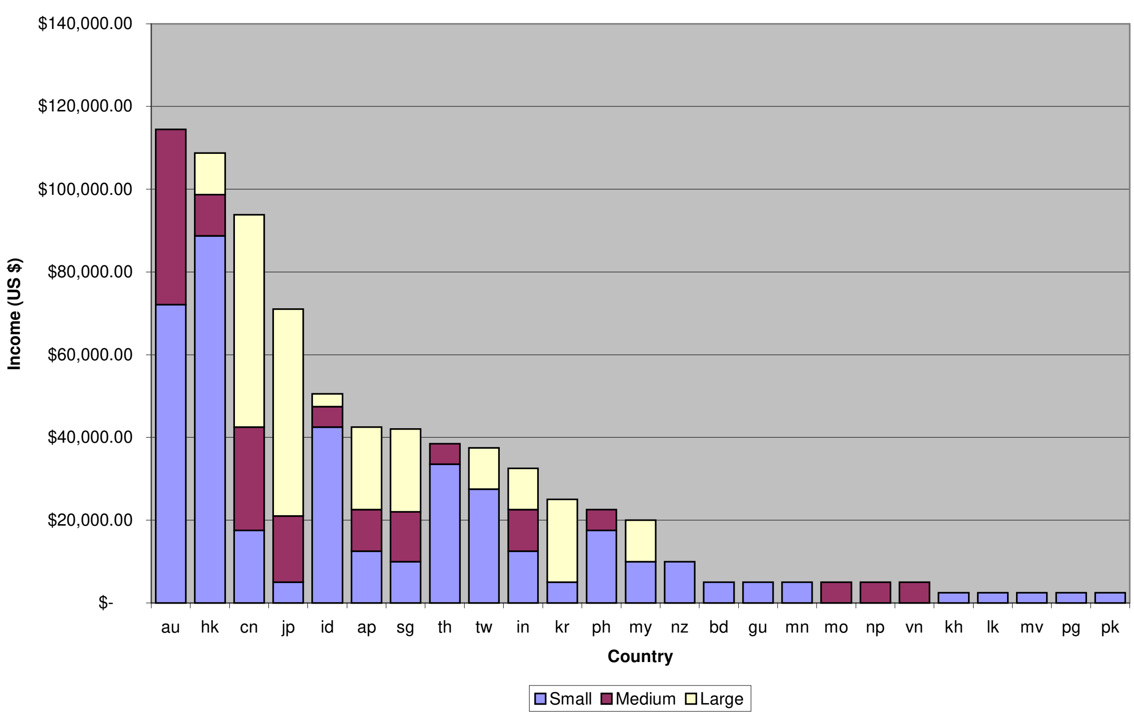
The large spikes found in the summer months are primarily a historical artifact; APNIC instituted its yearly membership fees in June, 1996 so organizations that had previously made use of APNIC's services without payment became APNIC members at the initiation of the membership system. As a result, they paid their fees, either in June or soon after, resulting in a large number of members have anniversary dates around the same time.

Geographically, the distribution of income to APNIC indicates that Australia provided the highest level of financial support to APNIC, contributing 15% of APNIC's income, with Hong Kong (14%) China (12%), and Japan (9%) rounding out 50% of APNIC's membership income (note: for the purposes of APNIC, China and Hong Kong continue to be considered separate entities in keeping with the Internet tradition of using the ISO-3166 country codes as the determiner of entities). This geographical breakdown is presented in full in the graphs below, both in terms of percentage of membership income as well as broken down by self-determined "size" tier. One note regarding the latter chart, Telstra (Australia) is a member in good standing despite their "Large" membership fee not appearing in the graph below; Telstra had paid the 1997 fee in 1996 prior to invoicing, thus the Telstra payment does not appear in the 1997 books.

Income by Country (%)



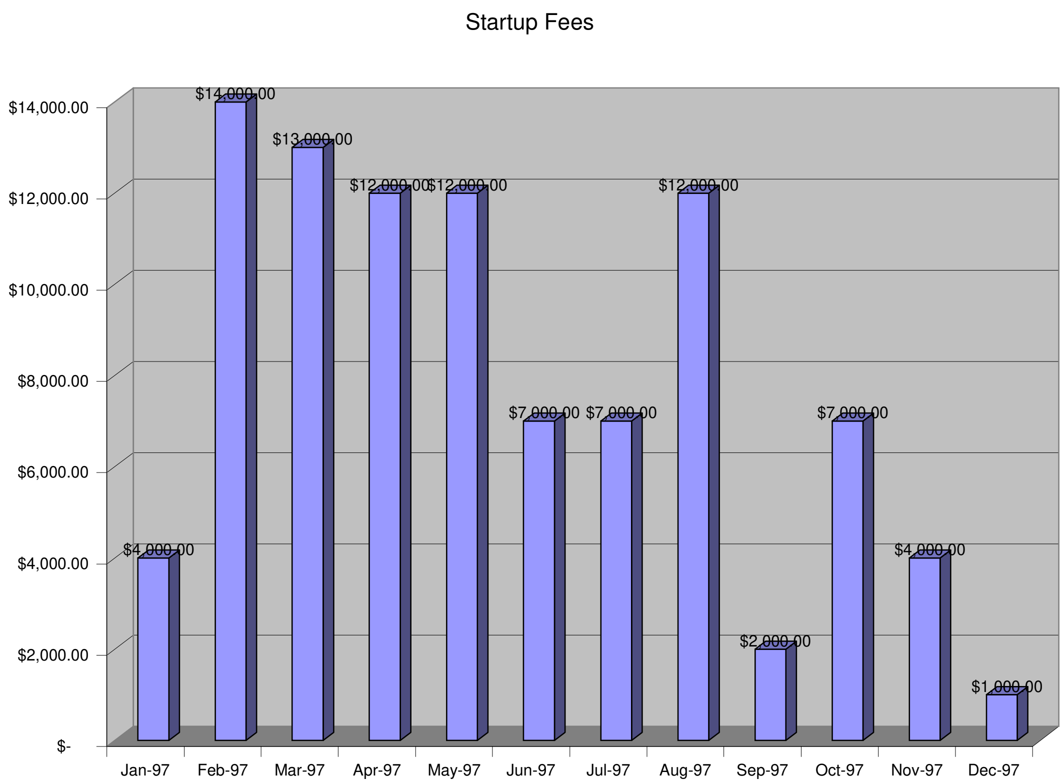
Income by Country



Account Creation Fees

APNIC charges a non-recurrent fee of US $1,000 to organizations that become APNIC members. This fee is intended to cover the administrative costs of account creation and initial contact with organizations requesting services from APNIC as well as discourage organizations from becoming members for a short period of time to avoid the relatively higher non-member fees. In 1997, the total income from these account creation fees was US $105,000.00 or 12.03% of APNIC total income. On a monthly basis, the average income from startup fees was US $7,916.67.

Monthly incomes from the startup fees, and implicitly membership growth, are shown in the following graphic.



Note that the June/July and December/January figures appear to be seasonal trends.

Non-Member Fees

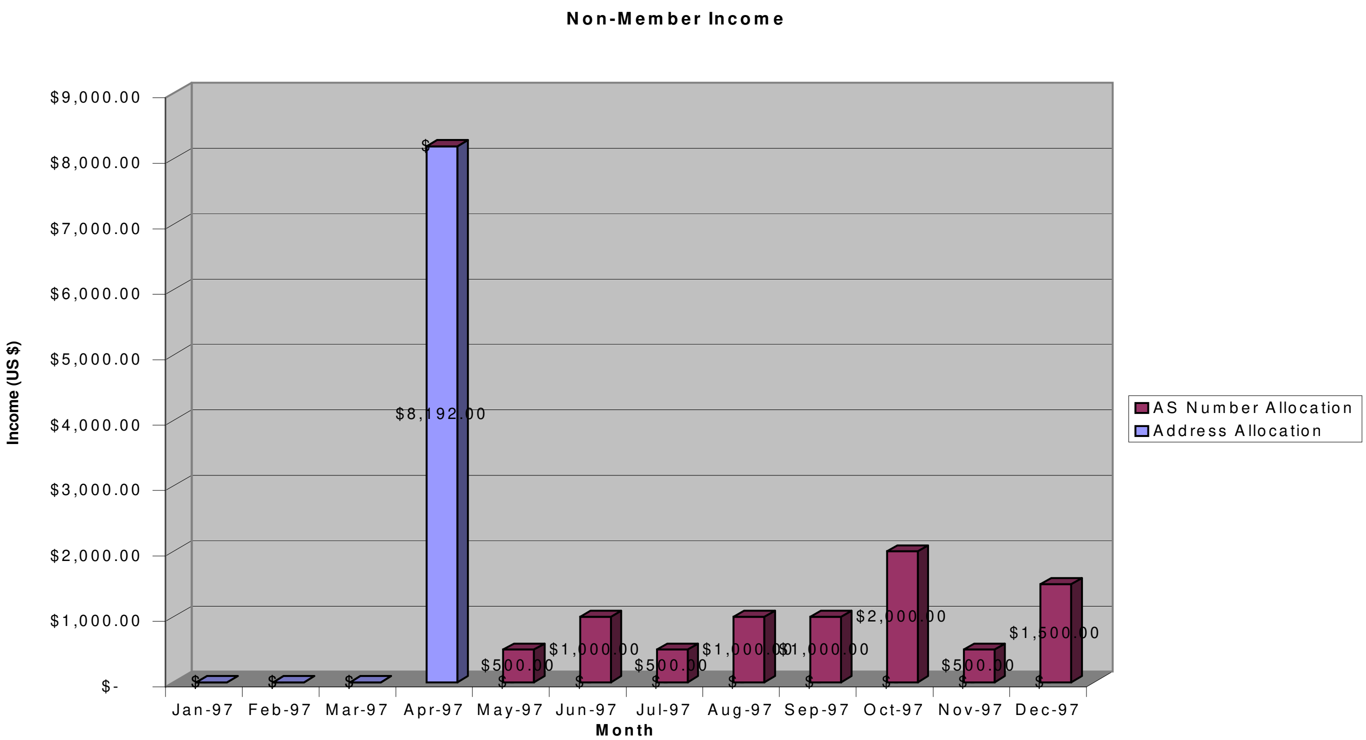
At the January 1997 APNIC meeting in Hong Kong, the APNIC membership voted to implement a fee schedule for non-member organizations requesting services from APNIC, namely:

Service	*Initial (non-recurrent) Cost*	*Maintenance (recurrent) Cost*
Internet Address Allocation	US $1.00 per address[1]	US $0.10 per address/year
AS Number Allocation	US $500 per AS Number	US $50.00 per AS number/year
In-addr.arpa Delegation	US $50 per delegation	None[2]

[1] Minimum fee: US $8192.00 regardless of the amount of address space actually allocated.
[2] Delegation may be removed if servers not configured appropriately

APNIC received a total of US $16,192.00, or 1.85% of APNIC total income, from non-member fees, with a monthly average of US $1,349.33. It should be noted that non-member income does not fall within the tax exemption APNIC has obtained, thus in the future it will be necessary to pay tax on this income.

Non-member fees for 1997 were approximately evenly distributed between Internet address allocation (with a single non-member allocation occurring) at US $8,192.00 and AS Number allocation at US $8,000.00. It should be noted that APNIC has not yet implemented charges for in-addr.arpa domain delegation as that service continues to be provided by the Australian National NIC at no cost. Migration of the service to the APNIC Secretariat is expected by the end of first quarter 1998. A graph depicting the monthly income derived from non-member fees over 1997 is presented below:



APNIC is seeing a trend in the increase of non-member requests for AS numbers, current growth indicating APNIC can expect to increase the number of ASes allocated to non-member AS on average by one every three months or so.

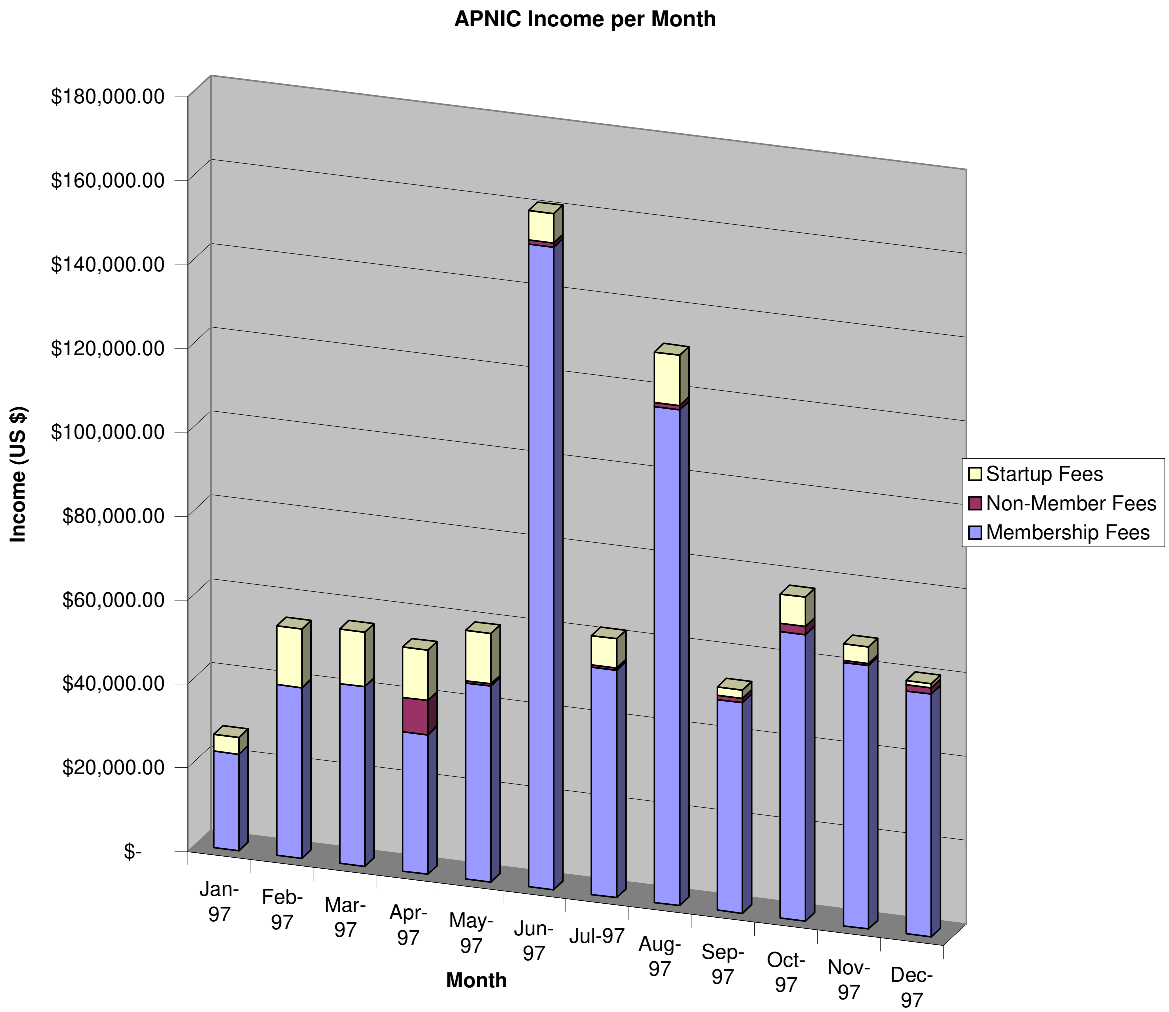
Miscellaneous Income

In addition to the fees mentioned above, APNIC received some interest income (US $7,432.54, 0.85% of APNIC's total income) from the cash surplus in our bank account and we received US $698.28 (0.08% of APNIC's total income) for APNIC meeting attendance fees applied to non-members.

Total Income

Totaling up the membership fees, the startup fees, the non-member fees, and the miscellaneous income, APNIC's income for 1997 was US $872,752.92, with an average income per month of US $71,896.08. As a result, at the end of 1997, the average amount of money paid per member was US $4,363.76.

A graph of income on a month to month basis is presented below.



Expenses

APNIC's total expenses for 1997 were US $721,578.01, or US $60,131.50 per month on average. The primary expense APNIC faced for 1997 was salaries at US $215,071.72 or 29.80% of APNIC's yearly expenses, that cost being twice as high as the next highest expense. As APNIC's staff must coordinate with the other regional registries, keep abreast of Internet protocol and operational developments, and meet with various organizations and officials throughout the Asia and Pacific Rim regions, the second highest cost for 1997 was that of travel at US $104,034.28 or 14.42% of APNIC's total expenses. Other expenses of note are

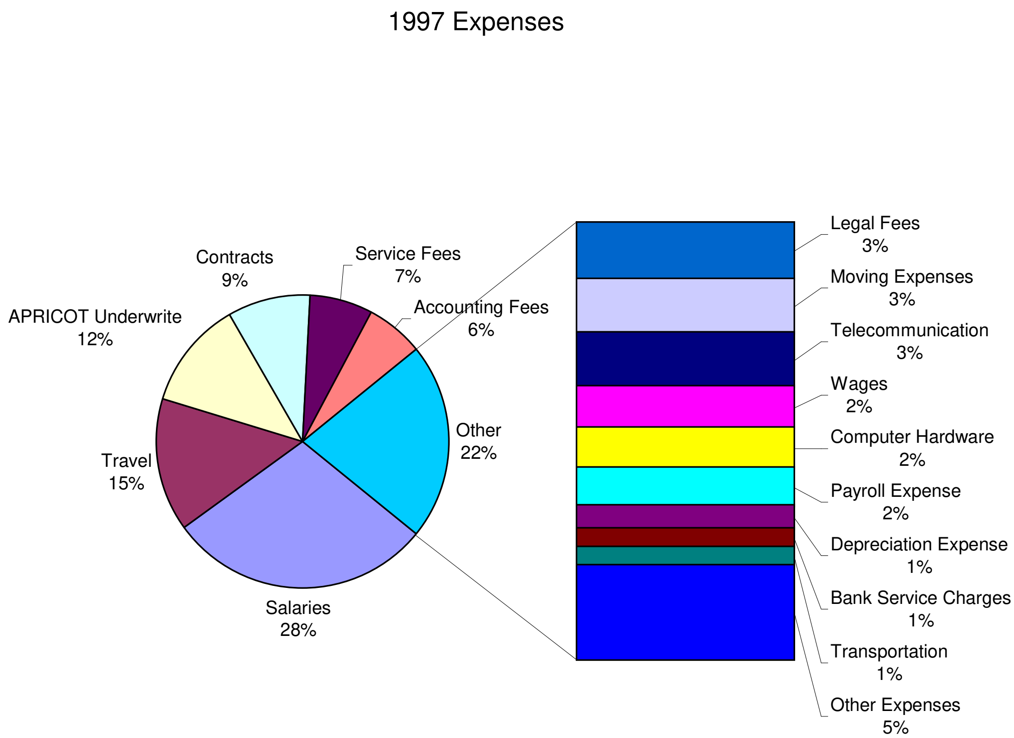
- The underwriting of APRICOT '97 in Honk Kong at a cost of US $86,296.03 covering the shortfall of receipts from sponsors and attendees;
- Contracts which consisted of software development and the hiring of an administrative assistant from a temporary agency in order to cope with the expansion of APNIC's membership;
- Service fees which consisted of the APNIC payment of US $50,000 to the IANA in April, 1997;
- Accounting fees which included the auditing of the 1996 books;
- Legal fees which included consultation on the laws relating to taxation in Japan and Australia, incorporation technicalities in Australia, and miscellaneous legal services;

- Moving expenses which include the costs associated with the relocation of APNIC's headquarters to Brisbane, Australia in first quarter 1998;
- Telecommunication fees which included telephone, fax, and ISDN Internet connectivity;
- Wages which represent non-contracted part-time employees;
- Communication expenses which included the cost of the purchase of telephone rights, ISDN terminal adapters, telephones, an answering machine, and other communication related expenses;
- Transportation which includes the cost of commuting and business related taxi and train fares;
- Meeting expenses which include the cost of the two APNIC meetings in 1997;
- Entertainment which includes twice yearly traditional Japanese "*ochugen oseibo*" or "thank you" gifts;
- Domain Name Registration which includes the APNIC.NET, APNIC.COM, APNIC.ORG, and other domain names, but which does not include the xxNIC.NET domain names (as they were paid after the close of the 1997 books);

A table summarizing all expenses for 1997 is provided below.

Category	*Cost*	*Percent*	*Cost/Member*
Salaries	$215,071.72	29.80%	$1,075.36
Travel	$104,034.28	14.52%	$520.17
APRICOT Underwrite	$86,296.03	12.04%	$431.48
Contracts	$66,257.51	9.25%	$331.29
Service Fees	$50,000.00	6.98%	$250.00
Accounting Fees	$45,700.92	6.38%	$228.50
Legal Fees	$20,545.98	2.87%	$102.73
Moving Expenses	$18,913.80	2.64%	$94.57
Telecommunication	$18,878.34	2.63%	$94.39
Wages	$14,597.14	2.04%	$72.99
Computer Hardware	$14,417.34	2.01%	$72.09
Payroll Expense	$13,175.62	1.84%	$65.88
Depreciation Expense	$8,268.13	1.15%	$41.34
Bank Service Charges	$6,582.64	0.92%	$32.91
Transportation	$6,378.83	0.89%	$31.89
Software	$5,959.17	0.83%	$29.80
Postage and Delivery	$5,238.50	0.73%	$26.19
Meeting Expenses	$5,046.63	0.70%	$25.23
Conference/Training Fees	$4,436.07	0.62%	$22.18
Bad Debt Expense	$3,868.45	0.54%	$19.34
Office Furniture	$2,180.23	0.30%	$10.90
Printing and Reproduction	$1,792.94	0.25%	$8.96
Office Supplies	$1,499.48	0.21%	$7.50
Communication Expenses	$1,082.09	0.15%	$5.41
Entertainment	$566.87	0.08%	$2.83
Office Equipment	$384.21	0.05%	$1.92
Books & Periodicals	$361.63	0.05%	$1.81
Domain Name Registration	$301.68	0.04%	$1.51
Licenses and Permits	$162.50	0.02%	$0.81
Repairs	$157.43	0.02%	$0.79
Total	$716,606.16	100%	$3,583.03

Graphically, these expenses are presented below:



Balance Sheet

As of December 31, 1997 APNIC's Balance Sheet can be summarized as:

Assets

Current Assets	
Citibank, Singapore	US $397,006.78
Sumitomo, Tokyo	US $19,915.06 (in Japanese Yen)
Petty Cash	US $1,934.60
Accounts Receivable	US $108,211.48
(Allowance for doubtful accounts)	US ($3,814.69)
Prepaid Expenses	US $6067.72
Total Current Assets	**US $529,320.95**
Fixed Assets	
Computer Equipment	US $44,002.79
(Accumulate depreciation)	US ($10,085.96)
Total Fixed Assets	**US $33,916.83**
Intangible Assets	
Telephone Rights	US $2,039.73
Total Intangible Assets	**US $2,039.73**
Total Assets	**US $565,277.51**

Liabilities and Equities

Current Liabilities		
	APRICOT[3]	US ($4,596.93)
	Expense Payable	US $12,060.17
	Total Current Liabilities	**US $7,463.24**
Equity		
	Common Stock	US $1.00
	Retained Earnings	US $557,813.27
	Total Equity	**US $557,814.27**
Total Liabilities and Equity		**US $565,277.51**

APNIC Resource Status

APNIC, as its primary function, allocates and registers three resources:

- Internet addresses, globally unique Internet Protocol addresses
- In-addr.arpa Domains corresponding to the addresses APNIC delegates
- Autonomous System (AS) Numbers, globally unique tags used to label groups of addresses as associated with a particular provider

The authority to delegate these resources was initially delegated to APNIC in January, 1994 during the APNIC Pilot Project with the transfer of control of the Internet addresses within the 202/7 block. Each of these resources will be discussed in more detail in later sections.

In addition, as an attempt to promote a common naming system for national Network Information Centers in the AP region, APNIC reserved *xx*NIC.NET domain names where "*xx*" is the 2-letter ISO-3166 country code for countries in Asia and the Pacific Rim. As a result, APNIC has the authority to delegates these *xx*NIC.NET domains to appropriate organizations in the Asia and Pacific Rim regions and this delegation authority rests with the APNIC Executive Council.

To date, the following xxNIC.NET domains have been delegated:

Domain	*Delegated To*	*Date Delegated*
THNIC.NET	THAINET	October 21, 1993
AUNIC.NET	Australian Academic and Research Network	November 19, 1993
KRNIC.NET	Korea Network Information Center	December 2, 1993
TWNIC.NET	Taiwan Network Information Center	January 18, 1994
JPNIC.NET	Japanese Network Information Center	April 4, 1994
MYNIC.NET	MIMOS BHD	September 28, 1995

Requests have been received in the past for TONIC.NET (Tonga), CNNIC.NET (China), SGNIC.NET (Singapore), PHNIC.NET (Philippines), INNIC.NET (India), IDNIC.NET (Indonesia), LKNIC.NET (Sri Lanka), VNNIC.NET (Viet Nam) and PKNIC.NET (Pakistan), however no additional delegations have yet occurred as the organizations in question did not meet the criteria (i.e., obtain a "rough consensus" of the

[3] APNIC carried APRICOT as a liability account. The negative balance indicates the amount disbursed on APRICOT '98 as of December 31, 1997.

Internet community in the country in question and/or represent the government of the country in question directly) for the delegation to occur prior to the end of 1997.

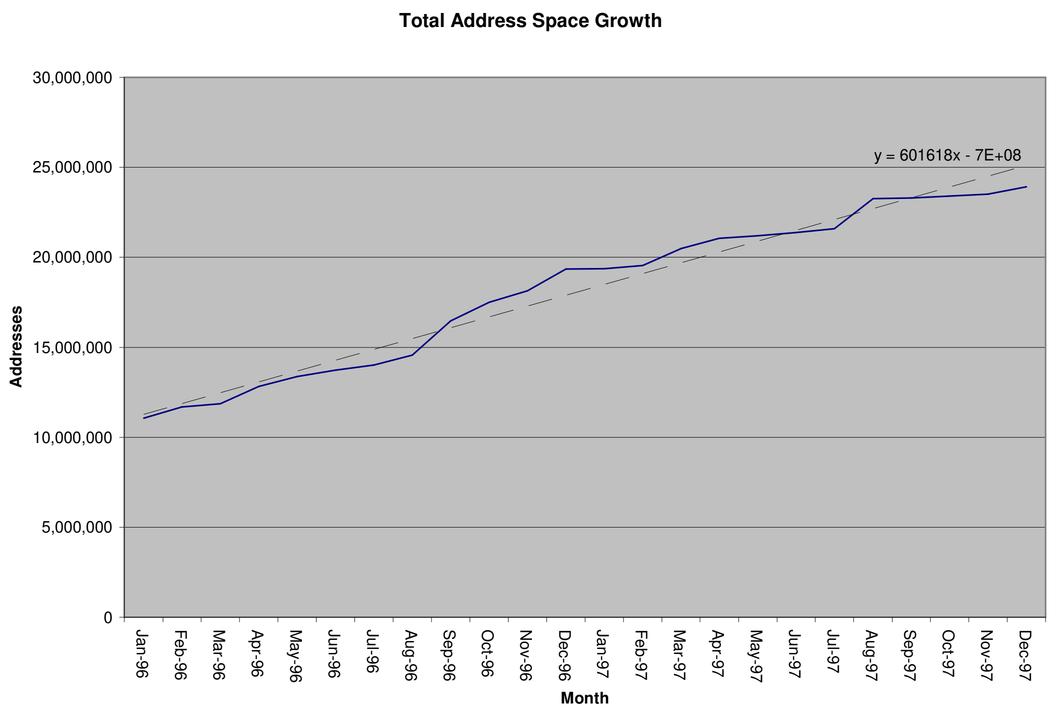
Note that, unlike the other resources APNIC administers, there are no fees associated with the service of allocating *xx*NIC.NET domains to appropriate organizations.

Internet Addresses

APNIC has been delegated the following blocks of addresses for sub-delegation within the Asia and Pacific Rim regions:

Address Block	*Addresses*	*% Allocated*	*% Reserved*	*% Free*	*Date Delegated by the IANA*
202/7	33,554,432	55.22	24.71	20.07	January 10, 1994
169.208/13[4]	1,048,576	0.00	0.00	100.00	June 6, 1995
210/7	33,554,432	21.88	0.00	78.12	September 16, 1996
61/8	16,777,216	0.00	0.00	100.00	April 25, 1997
Total	84,934,656	30.46	9.76	59.78	

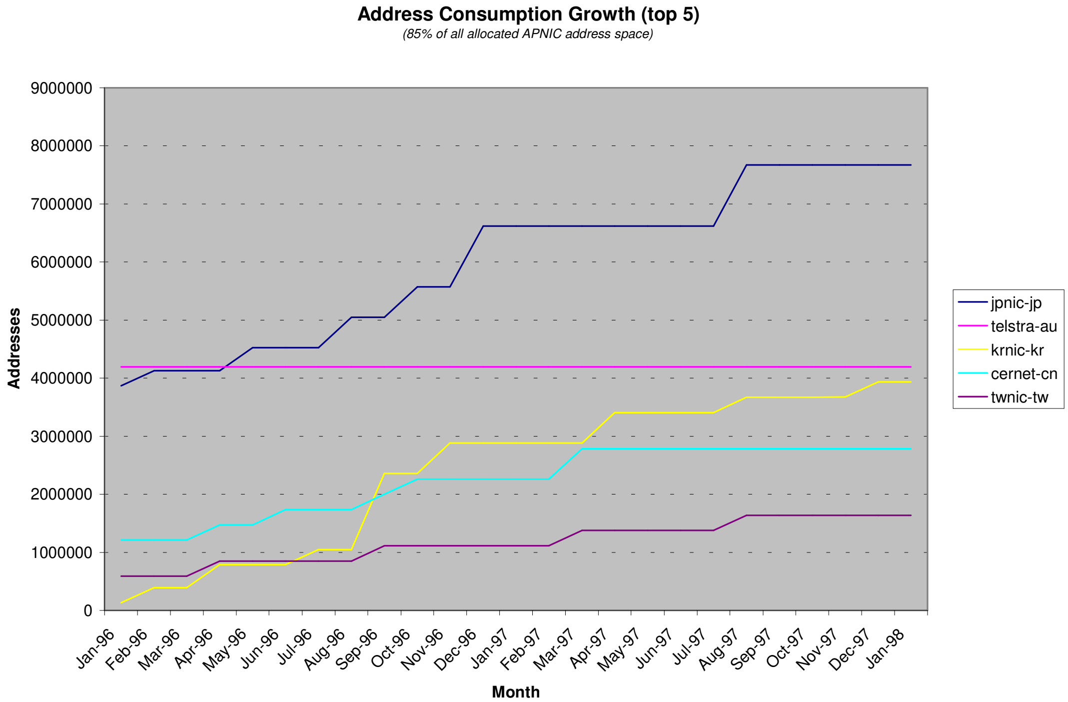
As previously mentioned, address space consumption in 1997 has increased 30% over the usage of 1996. This growth can be see in the following graph (which includes 1996 growth for context):



As can be seen, address space consumption has been fairly consistent for the last two years. From the linear projection of the address consumption rate, it can be expected that APNIC will consume approximately 7,000,000 (a bit under a /9) addresses over 1998. At this consumption rate, APNIC's existing address pool should last until around 2005.

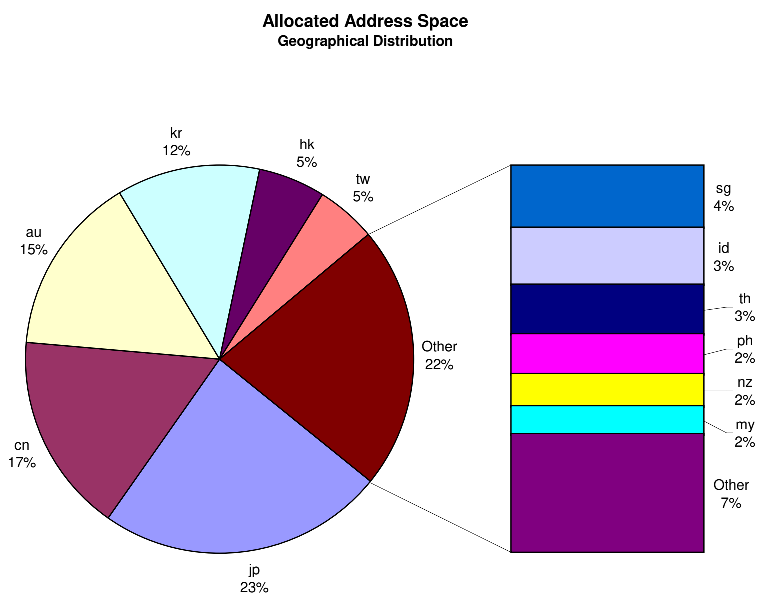
[4] APNIC uses 169.208/13 for short-term use, e.g., exhibitions, conferences, special events, etc.

In terms of address space consumption by specific APNIC members, the following graph shows the consumption rate of organizations that have address space registered in the APNIC database:



These five organizations (JPNIC (Japan), Telstra (Australia), KRNIC (Korea), CERNET (China), and TWNIC (Taiwan)) account for 85% of all address space allocated out of address blocks delegated to APNIC. It should be noted however that all the Telstra delegation and significant portions of both the JPNIC and KRNIC space were allocated prior to the existence of APNIC.

Geographically, the distribution of address space is perhaps not too surprising given the address usage described above. The following pie chart gives the distribution for countries served by APNIC:

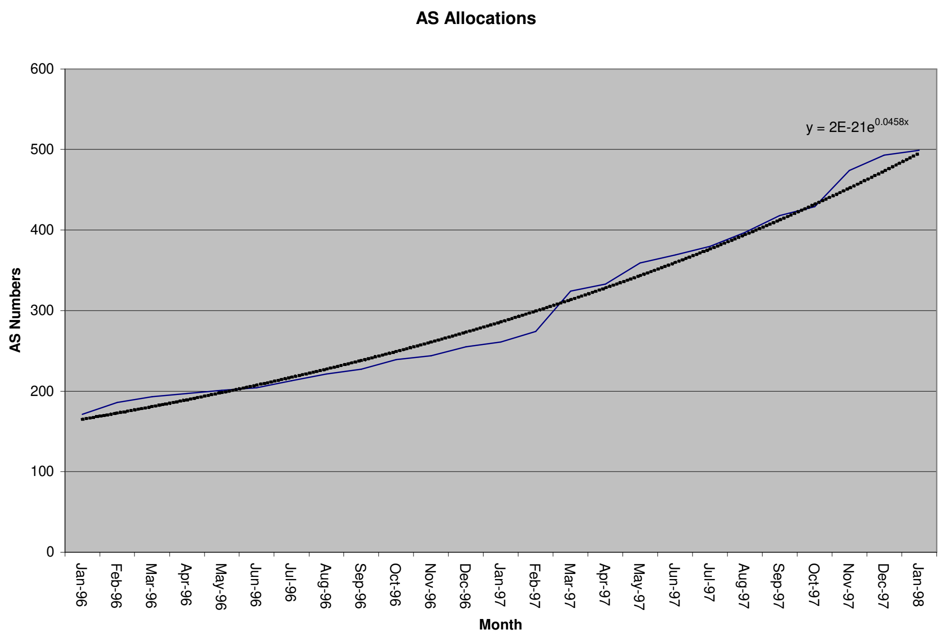


Autonomous System Numbers

APNIC has been delegated the following blocks of autonomous system numbers for sub-delegation within the Asia and Pacific Rim regions:

AS Block	*ASes*	*% Allocated*	*% Reserved*	*% Free*	*Date Delegated by the IANA*
4608-4863	256	85.94	14.06	0.00	February 23, 1995
7467-7722	256	95.70	1.95	2.34	December 23, 1996
9261-10239	979	0.00	0.00	100.00	December 23, 1996
Total	1491	31.19	2.75	66.06	

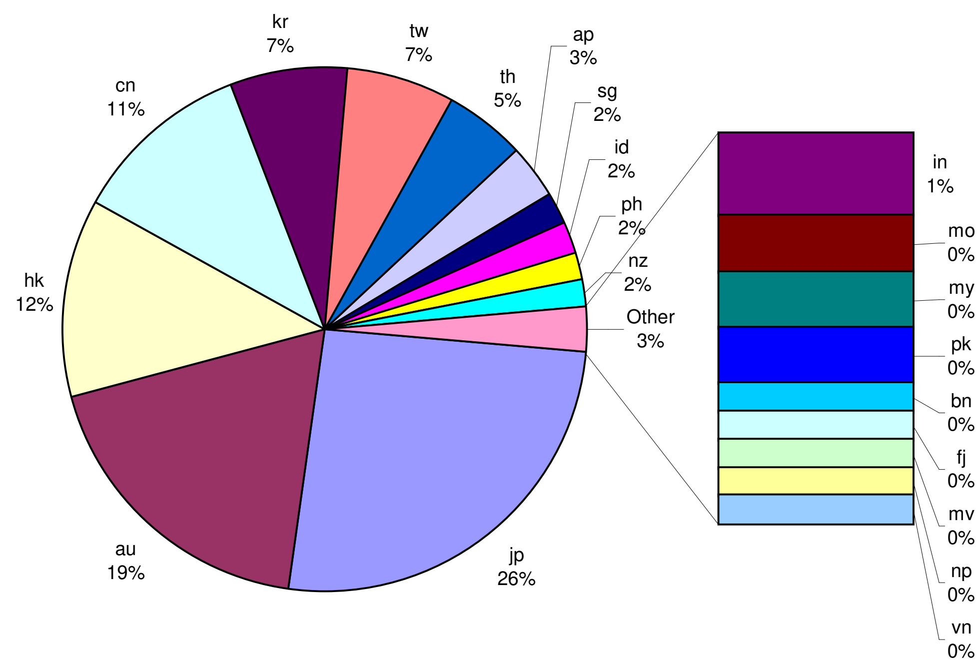
As can be seen in the following graph, growth in the consumption of AS numbers has been fairly consistent over the last two years, hovering near 100% per year growth.



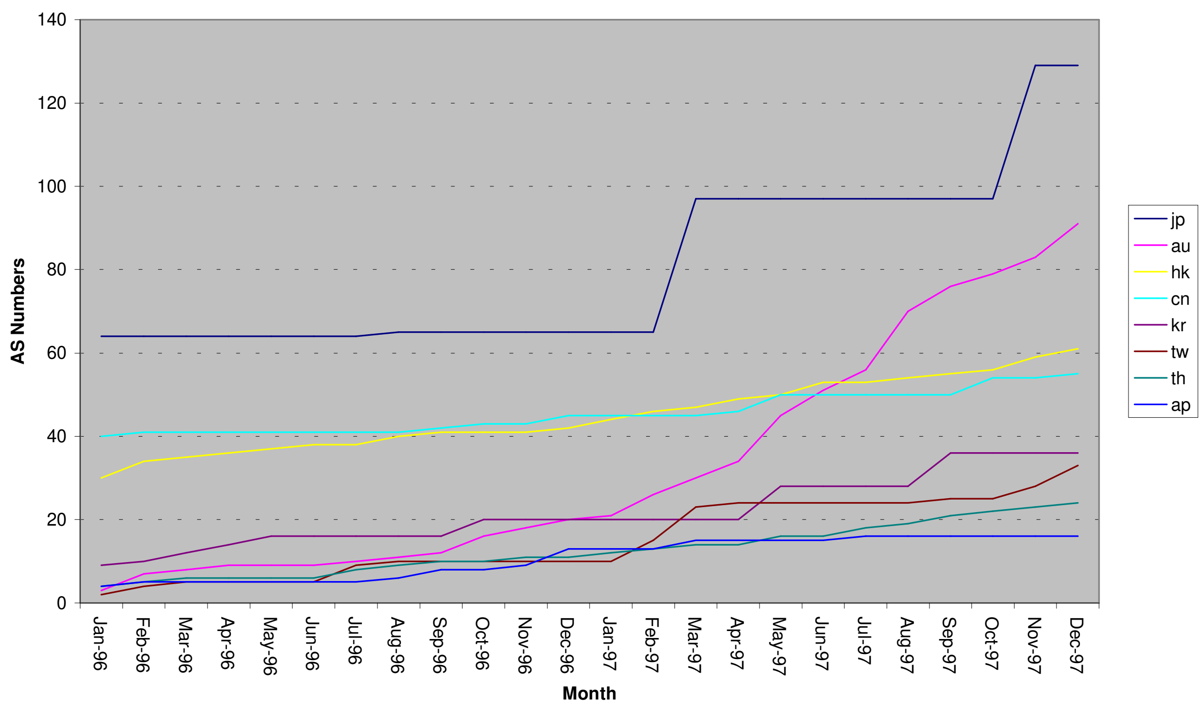
As AS numbers are necessary when service providers interconnect, the number of AS numbers allocated can be seen as a rough metric of the complexity of the Internet in the region. The fact that AS number allocations have exponentiated over the last two years would tend to imply the interconnectivity of the region's Internet is increasing. Assuming the current exponential growth rate continues (at least for the near term), APNIC's current supply of AS numbers can be expected to last only until the end of 1998.

AS number allocation growth by country follows a pattern similar to that of address allocation. One possible explanation is that as a country's Internet grows larger, there is a natural tendency towards interconnection of the various networks internally. The following graphs show the geographical distribution both in terms of percentage of all AS numbers allocated as well as the growth over the last two years for particular countries. The later graph also adds support to the use of an exponential growth model as several countries demonstrate a growth rate corresponding to an exponential curve.

AS Number Allocation
Geographical Distribution



AS Number Usage
by country over time



Allocation, Registration and Informational Support Services

APNIC's primary functions are the allocation of address and other resources and maintenance of registration data on those allocations. The APNIC hostmaster receives a variety of requests for those functions that can be categorized in the following fashion:

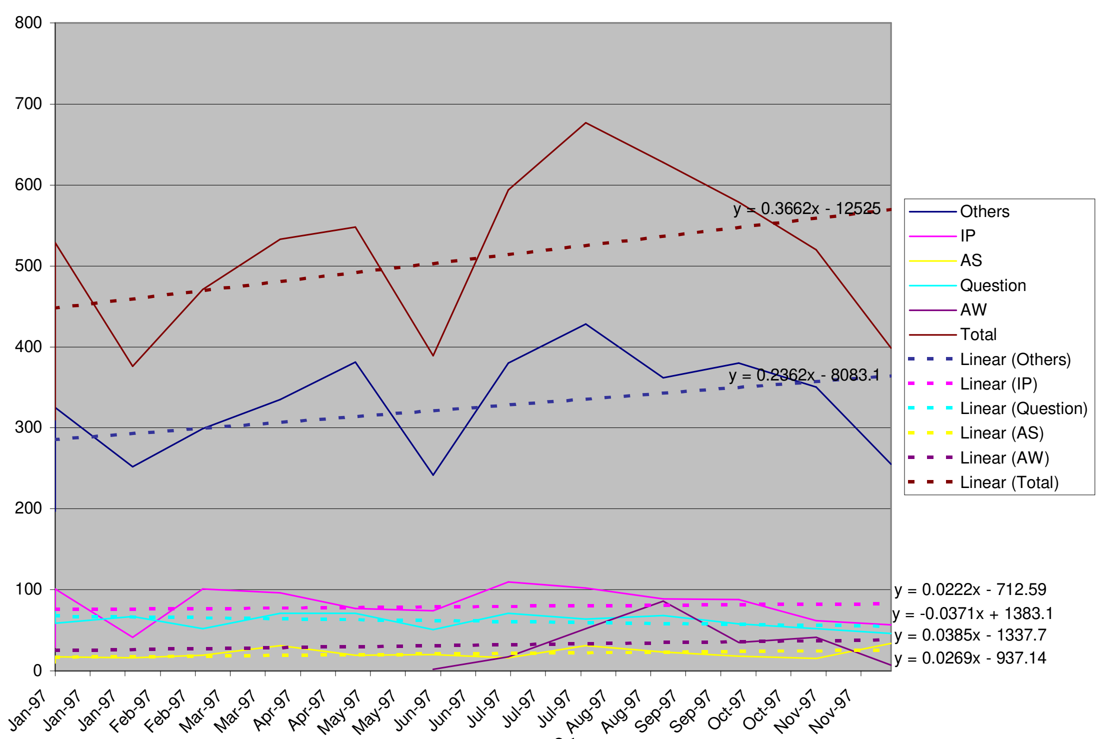
- IP -- Internet address requests, either ISP or end user
- AS -- AS number requests
- AW -- Assignment window second opinion requests
- Questions -- non-request related questions
- Others -- Responses to queries, generally related to IP or AS requests

In 1997, APNIC received the following numbers of email requests:

Email Type	Number of Messages
IP Request	1027
AS Request	269
AW Request	267
Questions	804
Others	4186
Total	6553

As can be derived from the above, APNIC received approximately 6.5 requests per workday. Since the "other" category above is messages in response to requests for more information triggered by an initial assignment window, AS, or IP address request, the average number of replies to these requests for additional information would be 3.23 messages for a total of
27.3 emails per workday related to allocation services.

When viewed over time as in the graph below, a slow growth pattern can be seen for all email categories except questions, which tended to decrease over 1997. However, it may not be coincidental that most requests except AS numbers took a significant drop towards the end of the year, given the regional



economic situation. Increases in AS requests may indicate increases intra-regional connectivity, perhaps as service providers around the region attempt to reduce their transiting international circuits to reach domestic sites.

Internet Address Allocation Requests

When an organization requires Internet addresses, they should in all instances where global connectivity is a requirement contact their Internet service provider and request address space. However, in some situations, it impractical or infeasible to obtain address space from a provider, thus organizations contact APNIC.

When APNIC receives a request for address space, the first response is to list the organization's options. These options include:

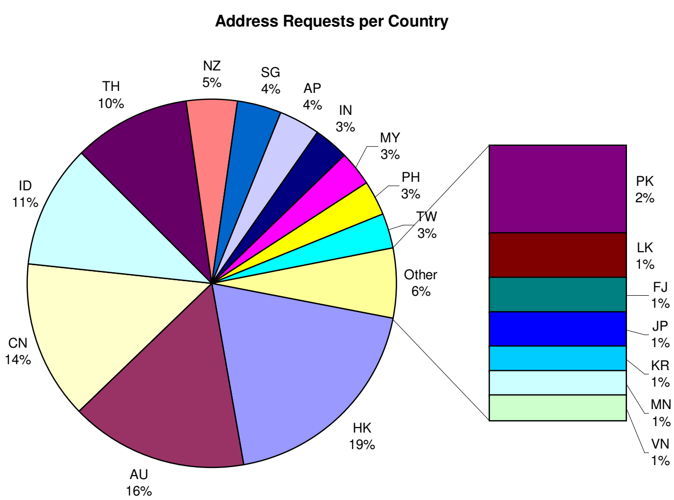
1. Obtaining the necessary space from an Internet service provider
2. Make use of Network Address Translation or other related technologies
3. Become an APNIC member
4. Obtain resources as a non-member and pay the non-member fee schedule

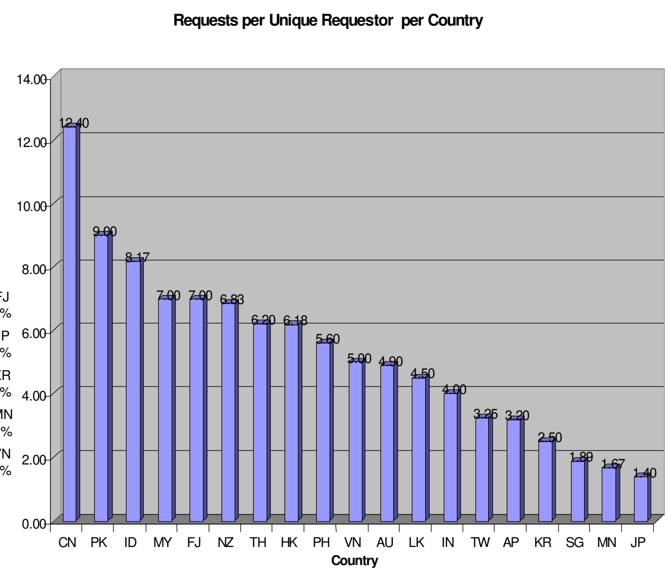
In options 1 and 2 above, the organization no longer needs contact APNIC. In options 3 and 4, the organization will submit an address request which will be processed when APNIC receives either payment (in the case of non-members) or a signed membership agreement in return (payment is also acceptable to initiate request processing).

Request processing entails the APNIC hostmaster staff first insuring the submitted request form is syntactically correct and then verifying the information provided is implementable, consistent with previously provided information, and conforms to existing registry policies as defined in RFC 2050 and APNIC policy documents.

Generally, the second step mentioned above results in protracted discussions as APNIC requests additional information to understand the requestor's intentions and the requestor attempts to provide sufficient information. Following these discussions, APNIC allocates sufficient space to satisfy the requestor's needs (as determined by APNIC) targeting sufficient space to satisfy the requestor for 3 to 6 months.

The total number of address requests associated with unique requestors for August to December was 905, or 5.29 requests per requestor on average. The geographic distribution of requests is given below, along with a chart describing the requests per unique requestor on a country-by-country basis:



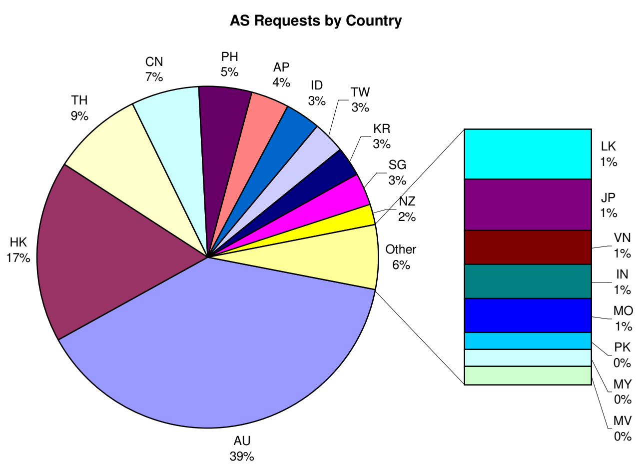


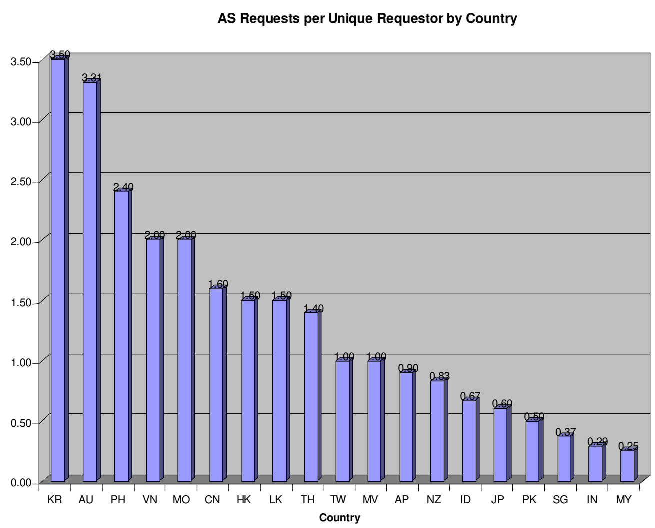
Autonomous System Number Allocation Requests

In the case of Autonomous System number requests, the procedures are similar to the allocation of Internet addresses until the review process takes place. As opposed to address requests, AS number requests merely need specify the peers they will be exchanging routing information with in a particular format. The hostmaster then verifies the peers make sense (e.g., that the peer is actually in the area in which the requestor says the peering will take place) and assuming the information provided is valid, the AS number is allocated.

In most cases, APNIC allocates a single AS number to organizations per request. In rare cases, an organization will request more than one AS number at a time, in which case APNIC requests additional information regarding the network topology. As is the case with address allocations, significant time may be spent in evaluating and discussing the network engineering plans in these situations. However, given APNIC puts no restriction on the transfer of AS numbers, some members are reselling AS numbers to non-member organizations.

The following graph shows the geographical distribution of requests for AS numbers by country as well as the number of AS number requests per unique requestor per country on average:



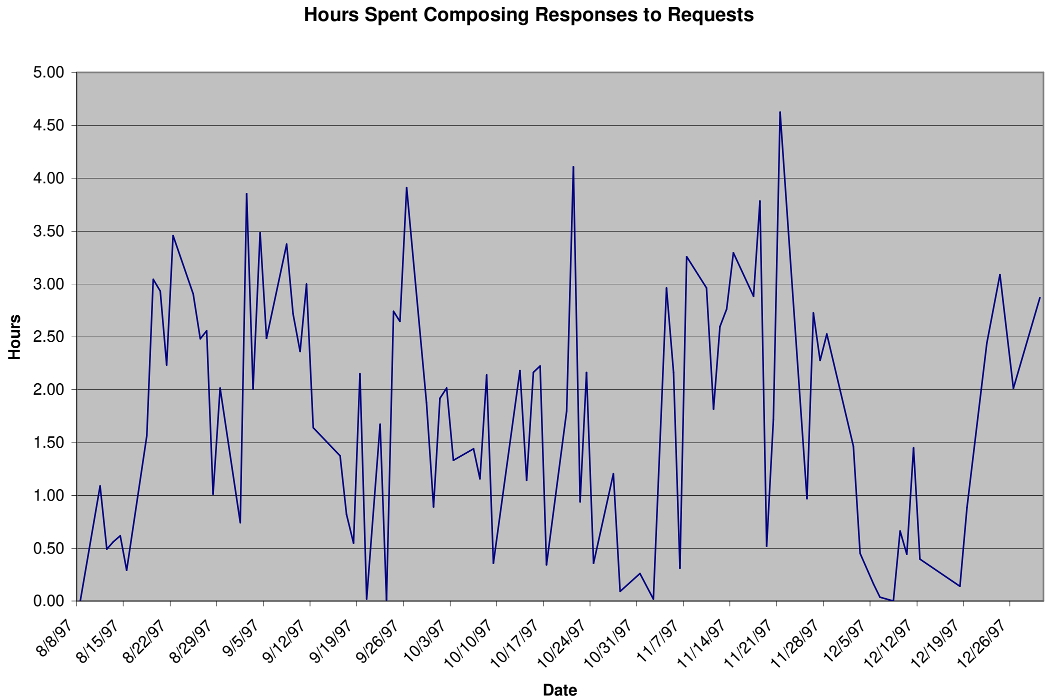


Hostmaster Statistics

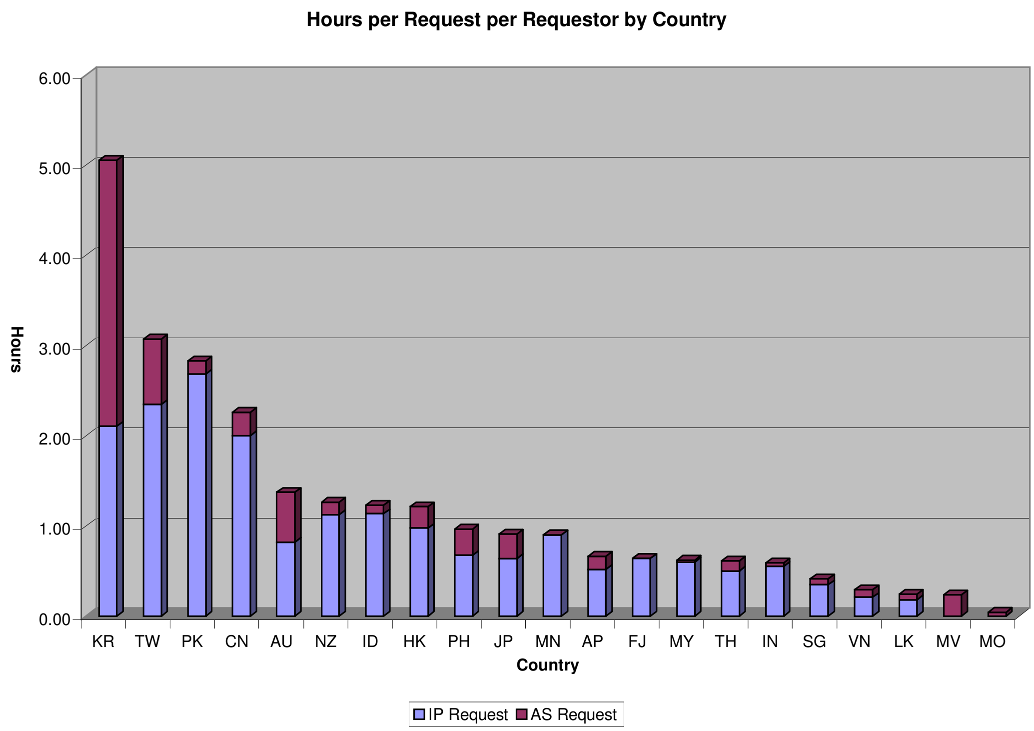
In August, 1997, APNIC began collecting statistics on the amount of time each request was taking by recording a timestamp as the editor was invoked when the hostmaster was responding to a query and recording another timestamp when the editor was exited. The value derived from subtracting the start time from the stop time represents the amount of time spent composing a response, but does not include the time outside the editor when the hostmaster was evaluating the requestor's network plans, topology, etc. As such, the statistics gathered are a very rough metric of how much time a request takes to process.

A total of 203.5 hours were collected from August to December, working out to approximately 2 hours per day on average for the hostmaster sitting in the editor replying to requests made by unique requestors or 1.2 hours per requestor on average for the five month period ending on December 31, 1997. With a total number of requestor related requests (both AS and address) of 1,151, the average amount of time composing a response per request was approximately 14 minutes.

The graph below represents the amount of time spent creating responses to requests during the August to December timeframe:

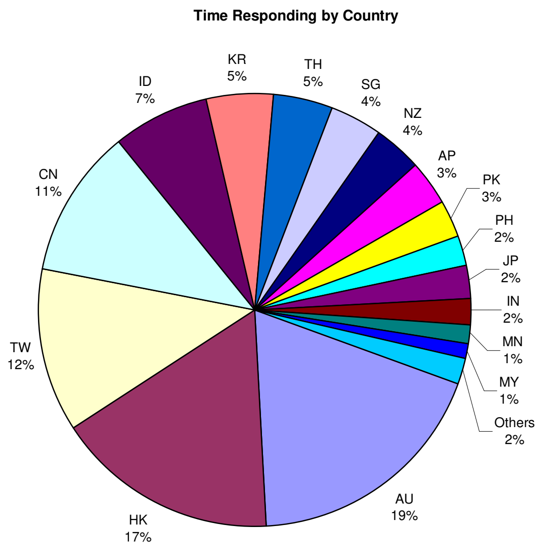


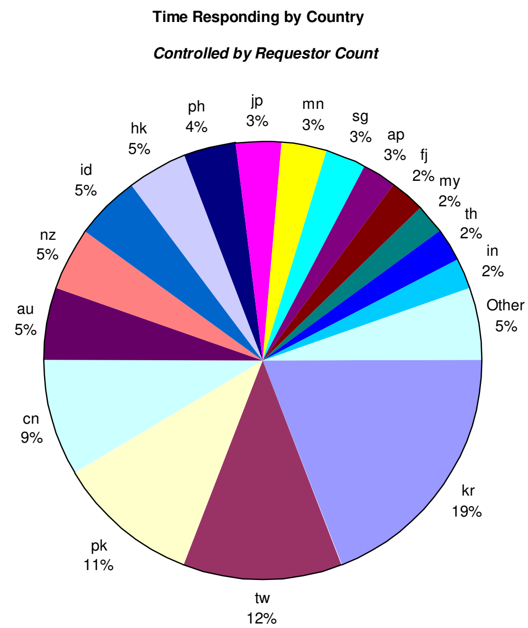
As the data collected also provides information on unique requestors (both member and non-member) and country the request is coming from, the amount of time spent composing responses per requestor and country can be established as is presented below:



Again, this data is presented with the caveat that it is only a rough metric of the time spent per country as it only includes time spent editing the responding email message, however as the number of comments/questions in a response to a request increase, the amount of time spent editing the message increases, thus this metric should correlate reasonably closely with the amount of time spent processing requests from each country.

One use of these metrics could be to target education and training as one assumption easily made would be that the less a requestor knows about APNIC policies and procedures, the more time it takes for APNIC to respond to their requests. Obviously, such assumptions however must be controlled by the number of requests arriving from each of the countries, that is, since some countries (e.g., Australia, Hong Kong) have many more requestors than others (e.g., Japan, Korea), the amount of time spent responding to requests should be more for the high requestor count countries than for the low requestor count countries, all other things being equal. The following graphs provide the total amount of time consumed for all members (and non-members) broken down by country and by country controlled by the number of requestors in the country.

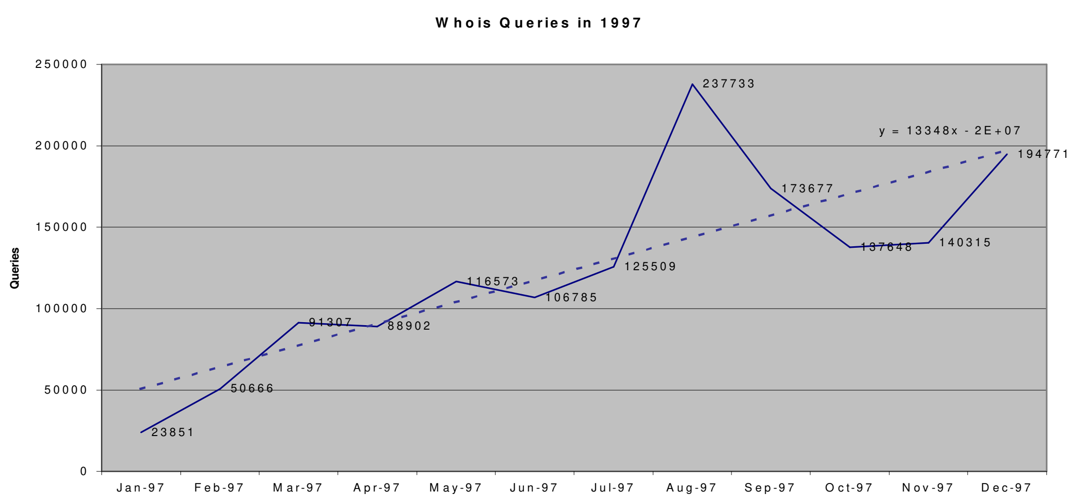




From the information provided above, it might be possible to determine locations where APNIC's resources can be most efficiently spent in training and education on APNIC policies and procedures.

Whois

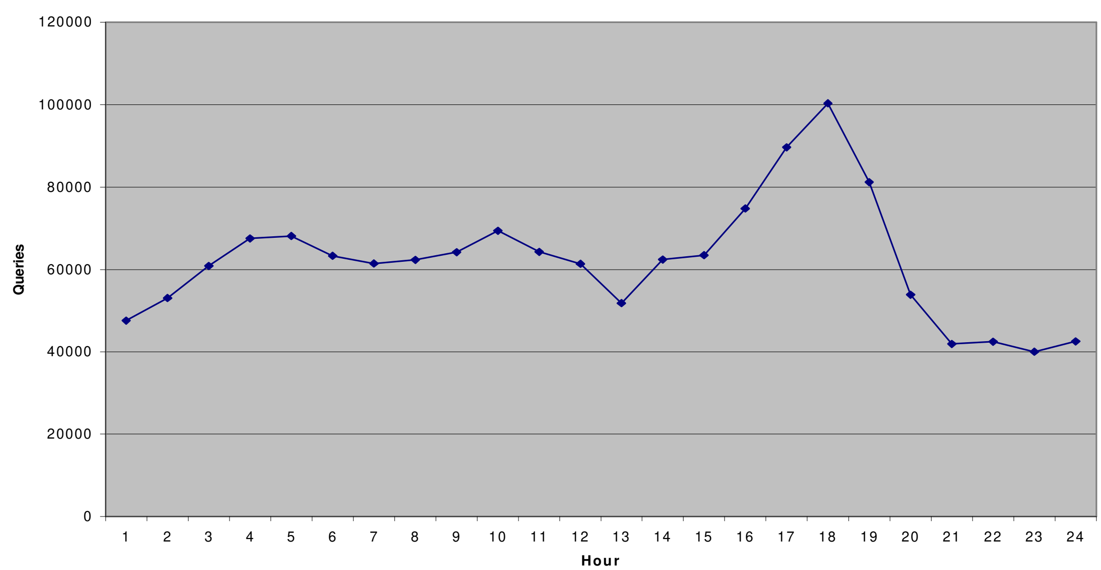
APNIC provides the Internet community with access to the APNIC registration database, primarily via the "Whois" protocol. In 1997, APNIC received 1,487,737 queries, or about 2.82 queries per minute on average. Graphically, the usage of Whois can be seen below:



As can be seen, there has been a very significant increase in Whois traffic over 1997, with a peak in August. It is likely that some part of the increase can be explained by the increasing levels of unsolicited commercial email and the complaints such email generates. As individuals attempt to locate whom to complain to, they receive a pointer to APNIC's Whois server, and in many cases, queries that server prior to complaining to APNIC regarding the unsolicited commercial email.

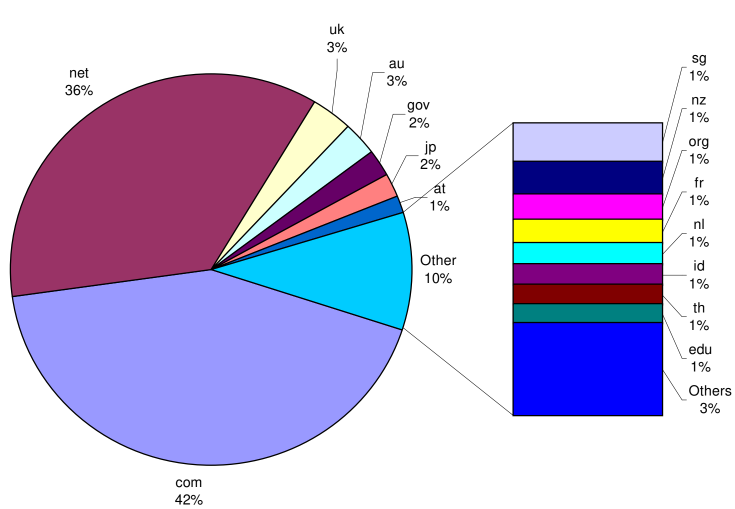
The following graph shows the time of day queries arrived, averaged over the entire year:

Queries per Time of Day



The daily peak averages out to approximately the end of the working day at the location of APNIC's Whois server. Perhaps not coincidentally, this coincides with the beginning of the working day on the East Coast of the United States. As APNIC's Whois service is accessible to the entire Internet, it is possible to determine (very roughly) the general location of where queries are coming from. The chart below details the breakdown of the top-level domains that submitted queries:

Whois Query TLD Distribution



As an estimated 85% or so of .COM and .NET domains are allocated to US based entities, the supposition that the increases in Whois queries are coming from people in the US after they get into work in the morning, perhaps as a result of searching for someone to complain to about the nights batch of unsolicited commercial email gains a bit of support.

Other APNIC Activities in 1997

In addition to the primary function of allocating Internet addresses and autonomous system numbers, APNIC has also been involved in other activities, including the underwriting of the Asia Pacific Rim Internet Conference on Operational Technologies, relocating the APNIC headquarters, consultation and observation at various Internet related conferences, software development, coordination with RIPE-NCC and ARIN, and discussions regarding the restructuring of the IANA.

APRICOT '97

As part of APNIC's By-Laws, APNIC is tasked "to provide educational opportunities to further Members' technical and policy understanding of the industry". As a means of providing educational opportunities to members, APNIC was among the creators of the Asia Pacific Rim Internet Conference on Operational Technologies (APRICOT), first held in 1996.

In 1997, APNIC acted as the primary underwriter for the APRICOT conference. The following expenses were incurred:

Expense	*Cost*
Hotel Charges	$114,884.27
Speaker Payouts	$106,015.48
Event Manager	$24,604.43
Exhibition Service	$22,846.88
Social Event	$10,903.75
Computer Rental	$10,462.69
Advertisements	$9,086.14
Registration	$5,048.45
Bags	$4,347.85
Internet	$4,047.69
Travel	$2,690.79
T-shirts	$2,647.62
Miscellaneous	$444.64
Total Expenses	$318,030.68

These expenses included:

- monies earned by the tutorial instructors and the money APNIC paid to reimburse speakers;
- payments covering the construction of the booth space;
- fees for event coordination;
- payment for the APRICOT '97 Hong Kong bay boat tour;
- advertisements in various newspapers and magazines;
- software and labor for registration;
- fees for termination of telecommunication lines for Internet connectivity;
- Terminal room and MBone computers;

The following income was received:

Category	Income
Apricot '96 Rollover	$15,067.41
Registration	$96,770.51
Sponsors	$119,896.74
Total Income	$231,734.66

This income included the profit made from APRICOT '96 in Singapore, fees received from registration by attendees, and the monies received from sponsors. As a result, APNIC ended up paying a total US $86,296.03 to cover costs.

As has been previously noted, this works out to US $431.38 per member at the end of 1997. It may be more cost effective for APNIC to become a sponsor for APRICOT than to continue to underwrite and organize the event.

APNIC Headquarters Relocation

Around first quarter 1997, APNIC began to investigate what would be required to hire additional staff for the APNIC office in Japan. After lengthy consultations with various organizations, it was established that the question of whether APNIC needed to pay tax in Japan was somewhat indeterminate. Specifically, according to two of three accountancy firms, APNIC should pay taxes, while the third indicated exactly the opposite. After significant discussion, it was decided to evaluate the costs of doing business in Japan vis-à-vis doing business in other Asia or Pacific Rim locations.

Location Survey

APNIC obtained preliminary information on the costs of living and costs of doing business from various sources including newspapers, magazines, and the World Wide Web. Based on the preliminary data gathered, APNIC obtained more detailed information for the following cities:

Auckland, New Zealand
Brisbane, Australia
Hong Kong
Jakarta, Indonesia
Kuala Lumpur, Malaysia
Melbourne, Australia
Singapore
Sydney, Australia
Tokyo, Japan

Based on cost-of-living surveys done by CRG, and taxation and other business related costs provided by KPMG Peat Marwick and Arthur Andersen, and given the fact that APNIC membership fees are considered non-taxable income in Australia, the Secretariat determined that the cost of doing business would be lowest in Brisbane, Australia.

Office Search

After the Executive Council decided on Brisbane, Australia as the new location for APNIC's headquarters, the search for the actual office space was initiated. After consultation with individuals in Brisbane, including local service providers, KPMG Peat Marwick, and the Queensland government, APNIC made use of the real estate agency of Jones Lang Wooten, a large commercial properties agency. The constraints APNIC placed on the new office were:

1. Less than US $2500 per month (including outgoings)
2. Large enough to support significant staff growth over the next few years
3. Convenient access

After reviewing several properties, APNIC entered into a five-year lease agreement for property at 33 Park Road, Milton. Fit out of the office space is scheduled to occur during February with occupancy slated for the beginning of March.

Re-incorporation

As a function of relocating to Australia, APNIC, Ltd. has become re-incorporated in Australia. The new incorporation of APNIC, now APNIC Pty Ltd., follows the same general structure of APNIC, Ltd. in the Seychelles, modifying the Memorandum and Articles of Association only in those areas in which either the existing articles did not make sense (e.g., making APNIC, Ltd. be subject to Seychelles law) or where concepts in Seychelles law did not apply in Australia (e.g., "bearer shares" which do not exist in Australia).

APNIC expects to migrate all existing members to the new corporate structure by the end of second quarter 1998. The relocation of APNIC to Brisbane, Australia is expected to be completed by that time as well.

Consultation and Observation

In order to keep up with Internet developments, both operationally and in the realm of policy, it has been necessary for APNIC staff to travel to various meetings, conferences, and other events. These meetings, in addition to the coordination meetings involved with APRICOT '98 and the various meetings with government officials, consultants, real estate agencies, etc. involved with the relocation of APNIC's office, has resulted in a very heavy travel schedule for APNIC personnel. The following table lists the meetings attended by APNIC Secretariat staff during 1997:

Date	*Event*	*Location*
January, 9 – 11	APRICOT '97 Coordination	Hong Kong
January, 12 – 14	APNIC Relocation Discussions	Australia
January, 23 – February 2	APRICOT '97	Hong Kong
March, 31 – April 17	38th IETF	USA
April, 20 – 26	APNIC Relocation Discussions	Australia
May, 20 – 24	RIPE Meeting	Ireland
June, 7 – 14	Pan Asia Networking Conference	Mongolia
June, 16 – 27	Inet '97	Malaysia
July, 1	APNIC Meeting	Malaysia
July, 13 – 14	APNIC Relocation Discussions	Australia
July, 14 – 15	APRICOT '98 Coordination	The Philippines
August, 11 – 15	39th IETF	Germany
September, 4 – 7	APNIC Relocation Discussions	Australia
September, 8 – 11	APRICOT '98 Coordination	The Philippines
October, 29 – 30	KRNIC Meeting	Korea
November, 3 – 6	Ascend Networking Seminar	Thailand
November, 11 – 13	Networking Conference	China
November, 15 – 19	ISP Consultations	Bangladesh
November, 21 – 25	APNIC Relocation Discussions	Australia
December, 4 –5	APRICOT '98 Coordination	The Philippines
December, 7 – 10	40th IETF	USA
December, 11 – 12	ISP.AU	Australia
December, 13 – 15	APNIC Relocation Discussions	Australia

As there were several events in which more than one APNIC staff member attended, there were a total of 41 person-trips in 1997. As a result of these travels, APNIC spent US $104,034.28, the second highest expense APNIC faced in 1997, or approximately US $2500.00 per trip.

Software Development

APNIC Request Tracking System

As the number of requests outstanding in the APNIC resource request queue has grown, it has become increasingly difficult to keep track of request priorities and the information associated with the requests. In addition, there has long been a need for members to receive an acknowledgement when they submit requests and a facility to determine the request status as it is being processed by APNIC.

APNIC has contracted out the development and integration of a request tracking system to provide the previously mentioned facilities. This software will assign a tracking number to each request submitted via email and allow the requestor to determine the request's status via the web, email, and finger.

The APNIC Request Tracking System is currently undergoing beta testing and is expected to be in operation by the end of first quarter, 1998.

APNIC Registry Database System

The current APNIC registry database software is based on the original RIPE-NCC database software and is showing its age. Various problems have been observed and while these problems have been remedied in the current RIPE-NCC database software, APNIC has been unable to migrate to the new software for compatibility and resource issues. However, in order to provide a higher level of service to the APNIC membership without hiring significantly more staff, a higher level of automation is necessary.

As such, APNIC has contracted out the development of a new registry database system using production level software (e.g., an SQL database, c++, etc.), and a highly integrated World Wide Web front end. This software is due to go into beta testing at the end of first quarter 1998 and is expected to be put into production sometime near the end of second quarter 1998. The new database system will support WWW and email update, lookups via WWW and Whois, and provide the public portions of the database in RIDE format to facilitate exchange of data with other registries.

In the interim, APNIC has also contracted out a web interface to the existing database software in order to facilitate migration from a purely email based system to one which can make use of the more user-friendly interfaces available on the web. The email-based interface will, of course, continue to be supported as it provides easy mechanisms to support bulk updates. The web interface to the existing database software has been in production use since November 1997.

Regional Registry Coordination and IANA Discussions

As a result of the turmoil resulting from discussions in Domain Name System policy and governance, the regional registries met on several occasions, generally at IETFs and other Internet meetings, and discussed appropriate directions the registries should take. As a result of these discussions, the registries met directly with the IANA and proposed the establishment of a new body, known as the "Global Internet Registrar" which would act as the parent for the regional registries, independent of developments at the IANA resulting from domain naming issues.

More specifically, the APNIC position has been that the membership-driven bottom-up model of authority that all regional registries now operate under is appropriate for the next level in the Internet administrative hierarchy, i.e., that the regional registries should become members of a parent body, provide the funding for such a body, and thereby gain input into policies which affect both the parent body as well as the registries and their memberships.

These discussions continue, and have gained some momentum with the recently released Green Paper by the US Department of Commerce. It is likely much more active participation on the part of APNIC will be necessary in the future.

Future Directions

This section describes APNIC's primary challenges in the upcoming years and provides projections of income and expenses necessary to meet those challenges.

Challenges and Issues

As with any organization that is seeing significant growth, APNIC faces certain challenges and issues. This section identifies the most significant of these topics and discusses possible approaches towards addressing them.

Service Requirements

APNIC is a monopoly, and as such, has no natural incentive driven by market demand to improve services. As a means to address this situation, APNIC has been established as a membership based organizations, that is, it is directly responsible to its membership. However, for APNIC to improve services, it must have input from the membership on those areas most in need of enhancement.

The Secretariat has identified obvious areas in need of improvement and has taken steps to remedy those areas in which the solutions are also obvious (e.g., the request tracking system and improved registry database systems). However, it is primarily the membership's responsibility to inform the Secretariat of the members' needs and to set the priorities the Secretariat should focus on to better serve the member's requirements.

Unfortunately, in the past, the membership has not been particularly active in guiding APNIC, despite establishing a mailing list for discussion (apnic-talk@apnic.net) and requesting input on numerous occasions. One possible approach to remedy this situation would be to conduct period surveys, perhaps quarterly, requesting input from the membership on APNIC's services, the quality and responsiveness of those services, and ways in which APNIC can improve the services it offers.

Education/Training

One area that has been identified by the Secretariat as being in need of improvement is the membership's knowledge of APNIC policies and procedures. Specifically, while the APNIC request forms have attempted to be clear and concise, far too much time is spent by the hostmaster staff in explaining how to fill out the forms and informing the member of the policies by which resources are allocated in response to form submissions. It is obviously far more efficient to provide this information to the membership in groups as opposed to on a one-by-one basis when organizations are requesting resources.

As such, the APNIC Secretariat is planning on revising the job description of all hostmasters to include training as a full 50% of their job responsibilities. In addition, the Secretariat plans on sending hostmaster/trainers to member locations when a large enough group of APNIC members make such a trip worthwhile.

Confederation Fees

One of the most difficult issues facing APNIC is a way of objectively determining appropriate fees to charge to confederations. A confederation is a group of perhaps independent entities (e.g., service providers) who form a single entity (the confederation) to request services from APNIC, however allocations of Internet address space are made in independent blocks. According to a membership vote in the Kuala Lumpur meeting, the APNIC Secretariat was directed to assess a US $2,000.00 fee for each confederation member. The difficulty lies in APNIC obtaining the membership information and in some cases, the confederation determining whom exactly their membership is.

One possible solution to this situation would be to use a metric that is more easily objectively verifiable, e.g., Internet address space and to charge on that metric directly. Alternative solutions would be to continue to use the per-member fees, but for the APNIC Secretariat to be much more stringent in the definition and enforcement of what exactly a confederation member is.

Funding Plan Modifications

When APNIC first proposed the existing funding plan, it was with an implied assumption that organizations that could pay more would pay more. Thus, the self-determined mechanism for selecting tiers was felt to be most appropriate. However, as the Internet has become more commercialized and organizations become more concerned with their bottom line, there has been a natural tendency for organizations to migrate from the "large" and "medium" tiers to the "small" tier.

As can be seen by the linear projections of membership growth previously discussed, growth of large members is approximately one every five months, whereas growth of medium members has gone negative, with medium members either dropping membership or changing tiers once every five months. It is likely these trends will continue and even accelerate given the economic situation in the region.

As the per-member cost of APNIC (at the end of 1997) was US $4,364.76, this is obviously an area of concern given the "small" fee is a bit over half of the per member cost.

There are several avenues in which to address this issue. The most obvious, and perhaps the simplest would be to simply remove the different tiers and increase the minimum fee to near the per-member cost for 1997, and expect non-member fees to make up the difference. Alternatively, the funding tiers can be restructured to remove the self-determined aspects, insuring that some organizations pay more money, thereby reducing the need of all organizations to pay an equal amount. Another approach would be to institute additional charges for particular types of service, e.g., per address charges, per request charges, mandatory training fees, etc. Finally, given APNIC's growth projections to do not indicate an immediate crisis, it could be appropriate to defer this issue to determine if the current growth trends in "large"/'medium" membership are a temporary situation and that growth, either in terms of absolute members and/or the "large"/'medium" tiers will be sufficient in the future to offset any expected shortfall in funding.

Expired Member Resource Recovery

The APNIC Secretariat has noticed some cases in which an organization becomes a member to obtain resources and then immediately terminates their membership in order to avoid paying the yearly membership fees for more than a single year. This tactic provides for significant cost savings over the cost of obtaining resources from APNIC via the non-member fee schedule, however is arguably inappropriate as no funding is provided to insure the resource allocated is maintained in the APNIC database.

The original concept behind APNIC membership was that it was a way by which organizations could share the responsibility and the costs of operating a regional registry. The use of the tactic detailed above avoids both the responsibilities and the costs and can result in jeopardizing APNIC.

On approach to handling this situation is to require organizations who obtain resources as APNIC members and then who later decide to end there membership to pay a fee equivalent to the yearly maintenance fee charged to organizations who obtained services via the non-member fee schedule. This approach would have the implicit effect of changing the "once and for all" policy of resource allocation to one of requiring a maintenance fee or the resource be returned to the free pool.

Database Cleanup

The current registry database system is has significant amounts of incorrect data. This is a significant issue as the registry database is intended to be the location of authoritative information on which organizations control which resources. It is likely that unless the registry database system is revised, conflicts will arise when organizations attempt to obtain Internet connectivity with historically allocated resources but which no longer have up to date information in the registry database.

There are several possible approaches to resolve this issue. As a first step, as APNIC transfers the registry data from the current database system to the new system being deployed this year, a clearer picture of how much data is in need of correction will be established. Following this initial cleanup step, the APNIC Secretariat can either proceed to charge a fee for database maintenance for the resources (fees corresponding with those on the non-member fee schedule) or can take active steps such as sending periodic email to insure the registry database information is up to date.

Unsolicited Commercial Email

As with the rest of the Internet, APNIC is subject to attacks of unsolicited commercial email. However, unlike most organizations, APNIC receives a very large number of UCE complaints due to the delegation records for the IANA allocated blocks that point to the APNIC Secretariat. While in most cases, these complaints are handled via an electronic form letter in response; there are approximately 10% of the complainants that require additional time to deal with. In addition, all APNIC blocks have been placed in anti-spam filters and have been nominated on several occasions for the "RBL" feed maintained by Vixie Enterprises.

There are two approaches to this challenge; the first being simply continue to operate as has been the case in the past, and the second take a more pro-active approach on addressing the UCE issue by requiring the APNIC membership to at least acknowledge the issue.

Continuing to operate as has been the case in the past, namely sending a form letter to people complaining to APNIC and then following up when necessary, may be an appropriate choice should the APNIC membership fee it inappropriate for APNIC to apply requirements based on what could be considered content issues. Alternatively, APNIC can require, as part of the membership agreement, that members take some steps towards addressing the issue of unsolicited commercial email.

In the latter case, given APNIC is a regional monopoly, extreme care must be taken to insure APNIC does not exclude organizations from obtaining Internet resources without recourse. Should this occur, it is almost certain APNIC would find itself embroiled in legal proceedings that would likely benefit no one. One possible approach would be for APNIC to require its membership to implement the role email addresses, including abuse@, as described in RFC 2142. In addition, given APNIC is receiving the complaints directly, it may be appropriate for APNIC to require its members to provide APNIC with a copy of its appropriate use policy, however it would be very inappropriate for APNIC to specify what that appropriate use policy contains.

In summary, there are a significant number of challenges facing APNIC, however with member input and support, APNIC will continue to provide the required services and should be more responsive to its member's requirements.

1998 Projections

This section details projections of membership growth, staffing, expenses, and income for 1998. All projections are derived from historical data, primarily from 1997.

Membership Growth

The following growth projections are derived by taking a series of linear regressions over the last 6 quarters, the last 5 quarters, the last year, the last 3 quarters, the last 6 months, and the last quarter, then averaging these projections to obtain a single linear regression which can be used to derive an estimate of APNIC growth. This approach was taken to try to reduce the effects of temporary aberrations in the historical data (such as the closing of AUNIC), and cyclic factors, yet to take into account for the trends in growth that have occurred most recently. It is likely more elaborate models can be used to establish APNIC's projected growth more accurately, however the procedure described should be sufficient to base projections for income and expenses. It should be noted however that these projections cannot take into account any modification to the funding tiers as described previously, nor do they take into account the impact confederations will have either on the number of new APNIC members or the income confederations might generate for APNIC.

The results of these linear projections are:

Quarters	*"Size"*	*Slope*	*Members*
6	Large	0.6667	31
	Medium	0.7112	42
	Small	7.3798	247
	Total	8.7577	320
5	Large	0.4036	27
	Medium	0.1519	33
	Small	7.0536	241
	Total	7.6169	301
4	Large	0.0909	22
	Medium	-0.3463	25
	Small	6.2762	229
	Total	6.0231	276
3	Large	-0.5000	13
	Medium	0.5896	20
	Small	3.9167	194
	Total	2.8177	227
2	Large	-0.6571	11
	Medium	0.1925	32
	Small	3.3714	186
	Total	2.9038	229
1	Large	0.5000	26
	Medium	0.0000	29
	Small	6.5000	226
	Total	7.0000	281
Average	Large	0.0877	21
	Medium	0.0262	30
	Small	5.7446	220
	Total	5.8585	271

From these figures, the Secretariat has assumed that at the end of 1998, APNIC will have 71 new members, with membership increasing by approximately six new members per month, of which one will be large and 70 will be small.

Staffing

As may be deduced from the relative staff to member ratios between the various regional registries, APNIC is quite understaffed. The lack of staff has begun to strongly impact the level of service APNIC provides to its members and will need to be addressed in the very near term. As such, the 1998 projections for staff include the following:

Position	*Full-time Equivalents*
Director General	1
Business Manager	1
Administrative Assistant	1
Senior Hostmaster/Trainer	1
Junior Hostmaster/Trainer	3
System Administrator	1
Assistants	2

Thus, the projected staff for APNIC at the end of 1998 will be 10 full-time equivalent positions providing a member to staff ratio of 27.1:1. The projected cost to APNIC (including all overheads) of this staffing level is expected to be US $550,129.20, or US $55,012.92 per full-time equivalent on average.

Expense Projections

Estimating expenses for 1998 is fairly difficult due to the relocation of APNIC's headquarters. These expenses will contain significant one-time costs related to the relocation of the APNIC headquarters to Brisbane, however there will be some savings due to the lower cost of doing business in Australia as compared to Tokyo. Estimates for expenses in 1998 are:

Expense	*Cost*	*Comment*
Payroll & Expenses	$550,129.20	10 Full-time staff plus expenses
Travel	$100,000.00	Includes cost of training trips
IANA Fees	$50,000.00	Depends on IANA
Office Construction	$47,980.40	One time cost
Internet - Data Center	$39,600.00	Maintained in JP due to AU Internet traffic costs
Moving Expenses	$35,000.00	One time cost
Contracting	$30,000.00	Software development
Rent	$28,080.00	Office space and outgoings
Office Furniture	$17,816.50	One time cost
Legal Fees	$15,000.00	Including new incorporation
Telephone/fax	$12,000.00	Includes ISDN fees
HW - Workstations	$12,000.00	For new staff
Internet - AU Office	$11,400.00	Includes traffic fees
HW - Servers	$10,965.00	One time cost
Office Equipment	$10,400.00	One time cost
Software	$10,000.00	OS licenses, commercial applications, etc.
Licenses/Fees	$10,000.00	As required in Australia
Accounting	$10,000.00	Year end audit/consulting
Electricity	$9,000.00	Includes air conditioning

Bank Charges	$6,000.00	Mostly currency conversions
Postage/Delivery	$6,000.00	Mostly membership agreements
Meeting Expenses	$5,000.00	APNIC Meetings
Training/Conferences	$5,000.00	For APNIC staff
Bad Debt	$4,000.00	Non-paying members
HW - Printers	$4,000.00	One time cost
HW - hubs	$3,000.00	One time cost
Repairs/Warranties	$3,000.00	For all APNIC equipment
Domain Name	$2,500.00	Primarily xxnic.net domains
Office Supplies	$2,000.00	Paper, toner, etc.
Printing	$2,000.00	Letterhead, business cards, etc.
HW - UPS	$1,250.00	One time cost
HW - Scanner	$1,000.00	One time cost
Books & Periodicals	$500.00	For APNIC staff
APRICOT	$0.00	Depends on the membership
Total	$1,054,721.10	

Based on a membership of 271 members, this works out to a per-member cost of US $3891.96 or a cost reduction (per member) of 10.83%.

Income Projections

Income projections are based on the number of members and the distribution of sizes as presented above. Based on those figures, the 1998 membership income for APNIC is expected to be:

Self-determined "Size" Tier	***Income***
Small	US $550,000.00
Medium	US $150,000.00
Large	US $210,000.00
Total	US $910,000.00

As there are projected to be 71 new members, the account creation fees are expected to add US $71,000.00 to the total income during 1998.

As APNIC has incomplete data on the number of members the confederations has, it is extremely difficult to estimate the income the confederations will provide. However, based on the information the Secretariat does possess on confederation membership, the estimated income APNIC can derive from confederations should be on the order of US $280,800.00.

In terms of non-member fees and miscellaneous income, assuming a similar level of non-member service requests as APNIC has received to date would seem to be a reasonable assumption. As such, APNIC can expect to receive approximately US $20,000.

Thus, the total projected income for 1998 is US $1,281,800.00, an increase of 46.87% over 1997 income, with a monthly projected income of US $106,816.70.

Projected Surplus

Based on the previous discussions, APNIC is projecting a surplus of US $227,078.90. With this sum applied to the surplus collected in 1997, APNIC projects to have a cumulative surplus of US $644,000.74, or approximately 61.06% of the 1998 projected expenses, well beyond the Executive Council mandated 50%.

1999 Projections

The projections provided for 1999 extrapolate from the 1998 projections, thus if the 1998 projections are in error or the models fundamentally flawed, it is to be expected that the 1999 projections are also in error, only more so. Despite this caveat, the figures presented below should provide a rough idea of APNIC's projected income and expenses in 1999.

Membership Growth

Using the same linear regression projections derived for the 1998 projections, the projected 1999 membership is as follow:

Quarters	Membership			
	S	M	L	Total
6	336	51	39	426
5	305	20	23	348
4	305	20	23	248
3	241	13	7	261
2	227	34	3	264
1	304	29	32	365
Average	289	30	22	341

Thus, using the same assumptions as with the 1998 projections, APNIC expects to have a total of 341 members in 1999, 84.75% being small, 8.8% being medium, and 6.45% being large.

Staffing Projections

Given the projected increase in members, APNIC will likely need to hire additional hostmaster staff to insure a consistent level of service to the membership. In addition, APNIC expects to hire another system administrator to administer the various systems within APNIC as well as a software developer who will be responsible for creating the tools to enable the hostmasters to perform their duties more efficiently.

Position	Full-time Equivalents
Director General	1
Business Manager	1
Administrative Assistant	1
Senior Hostmaster	1
Hostmaster/Trainer	3
Junior Hostmaster/Trainer	2
Senior System Administrator	1
Junior System Administrator	1
Software Developer	1

Thus, APNIC expects to have a total of 12 employees by the end of 1999, an increase of 20% thereby creating a member to staff ratio of 28.42:1. The expected cost of this staffing level is US $799,294.20 or a projected average per staff cost (including all overheads) of US $66,607.85.

Expense Projections

The following expense project generally assume a worst case 10% increase in many of the various costs to correspond with the growth APNIC expects:

Expense	Cost	Comment
Payroll & Expenses	$799,294.20	See Staffing above
Travel	$110,000.00	10% increase
IANA Fees	$50,000.00	Depends on IANA
Office Construction	$0.00	No additional construction projected
Internet - Data Center	$39,600.00	No change
Moving Expenses	$0.00	No additional moving expenses projected
Contracting	$0.00	No additional contracting projected
Rent	$29,203.20	4% increase
Office Furniture	$0.00	No additional furniture required
Legal Fees	$10,000.00	Reduction due to completion of incorporation in AU
Telephone/fax	$15,000.00	25% increase
HW - Workstations	$12,000.00	For new employees
Internet - AU Office	$11,400.00	No change
HW - Servers	$0.00	No additional servers projected
Office Equipment	$0.00	No additional office equipment projected
Software	$11,000.00	10% increase
Licenses/Fees	$10,000.00	No change
Accounting	$10,000.00	No change
Electricity	$9,900.00	10% increase
Bank Charges	$6,600.00	10% increase
Postage/Delivery	$6,600.00	10% increase
Meeting Expenses	$5,500.00	10% increase
Training/Conferences	$5,500.00	10% increase
Bad Debt	$4,000.00	No change
HW - Printers	$0.00	No additional printers projected
HW - hubs	$0.00	No additional hubs projected
Repairs/Warranties	$3,750.00	Increase covering new machines
Domain Name	$2,500.00	No change
Office Supplies	$2,200.00	10% increase
Printing	$2,200.00	10% increase
HW - UPS	$0.00	No additional UPS projected
HW - Scanner	$0.00	No additional scanners projected
Books & Periodicals	$550.00	10% increase
APRICOT	$0.00	Depends on membership
Total	$1,156,797.40	

Thus, the total cost per member of APNIC in 1999 is projected to be US $3,392.37 which would be an increase of approximately 9.69% over the estimated 1998 costs or 61.43% over the costs in 1997.

Income Projections

Based on the projected membership described previously and assuming no change to the current funding mechanisms, the projected income from membership fees would be:

Self-determined "Size" Tier	*Income*
Small	$ 722,500.00
Medium	$ 150,000.00
Large	$ 220,000.00
Total	$1,092,500.00

In addition to this income, would be the income from one-time account creation fees of US $70,000, a projected income from confederations of US $436,100.00 and an income from miscellaneous fees of approximately US $50,000.00. As a result, the total projected income for 1999 would be US $1,648,600.00 or an increase of 28.61% over the projected 1998 income and an 88.9% increase over 1997 income.

Projected Cashflow

With an income of US $1,648,600.00 and expenses of US $1,156,797.40, the projected surplus in 1999 would be US $491,806.60. When added to the surplus derived in 1998, the total surplus at the end of 1999 would be US $1,135,803.34 or 98.19% of the projected expenses. With such a large surplus, it may be appropriate for APNIC to lower its yearly membership and/or confederation fees.

Conclusions

APNIC, like the Internet in general, experienced very significant growth over 1997, both in terms of membership growth as well as resource utilization. Overall, APNIC's growth was 75% in terms of membership and 30% in terms of resources allocated. This report has provided information on APNIC's growth, the activities APNIC has undertaken, and the challenges APNIC faces at the end of 1997.

The growth APNIC has experienced has resulted in corresponding growth in APNIC's funding requirements and expenditures. This report has presented projections of the estimated 1998 and 1999 income and expenses along with projections of membership growth. These projections indicate that by the end of 1999, APNIC should have more than sufficient resources and most likely should consider reducing its membership fees.

It is hoped this report has provided information to the APNIC membership that explains where their monies have gone and the activities they have supported. APNIC will likely face significant additional challenges in the future, beyond those discussed in this report, thus support of the APNIC membership is crucial to APNIC's continued success.