

Asia Pacific Network Information Centre


APNIC

APNIC Training


Internet Resource Management

29 January 2010 – Dhaka, Bangladesh

15 South Asian Network Operators Group Conference



In conjunction with ISPAB



Asia Pacific Network Information Centre

APNIC

Introduction

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Assumptions & Objectives

<u>Assumptions</u>	<u>Objectives</u>
<ul style="list-style-type: none"> • Are current or prospective APNIC members • Have not submitted many requests • Are not familiar or up-to-date with address policies • Are not familiar with procedures • Are interested in address management 	<ul style="list-style-type: none"> • To provide an understanding of address management • To provide a working knowledge of the procedures for requesting resources from APNIC and managing these • To keep membership up-to-date with the latest policies • Liaise with members.

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Overview

- IRMe
 - Introduction to APNIC
 - APNIC policy development process
 - Internet registry policies
 - IP address request (Demo)
 - Second opinion request
 - IPv6 Policy and Procedure
 - MyAPNIC (Demo)
 - Reverse DNS
 - APNIC Helpdesk

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What is APNIC?

- Regional Internet Registry (RIR) for the Asia Pacific region
 - One of five RIRs currently operating around the world
 - Non-profit, membership organisation
- Industry self-regulatory body
 - Consensus-based
 - Open
 - Transparent decision-making and policy development
- Meetings and mailing lists
 - <http://meetings.apnic.net/29>
 - <http://www.apnic.net/community/participate/join-discussions/sigs>

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What does APNIC do?

<p>Resource service</p> <ul style="list-style-type: none"> • IPv4, IPv6, ASNs • Reverse DNS delegation • Resource registration <ul style="list-style-type: none"> • Authoritative registration server <ul style="list-style-type: none"> • whois • IRR 	<p>Policy development</p> <ul style="list-style-type: none"> • Facilitating the policy development process • Implementing policy changes
<p>Information dissemination</p> <ul style="list-style-type: none"> • APNIC meetings • Web and ftp site • Publications, mailing lists • Outreach seminars <p>http://www.apnic.net/community/lists/</p>	<p>Training</p> <ul style="list-style-type: none"> • Face to Face • Via e-learning <p>- Subsidised for members</p> <p>Schedule: http://www.apnic.net/training</p>

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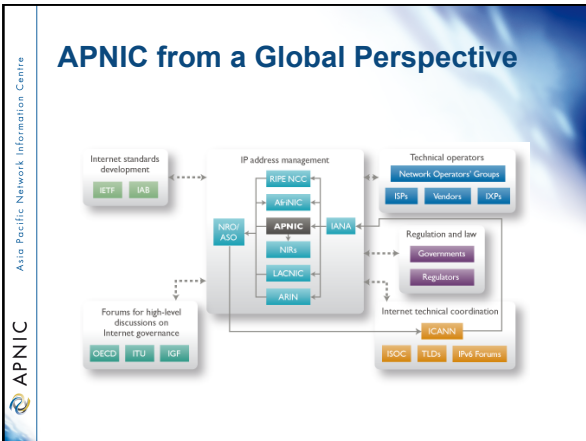
Where is the APNIC region?

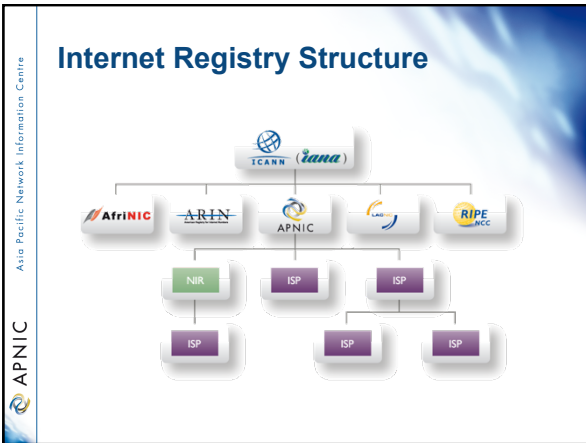
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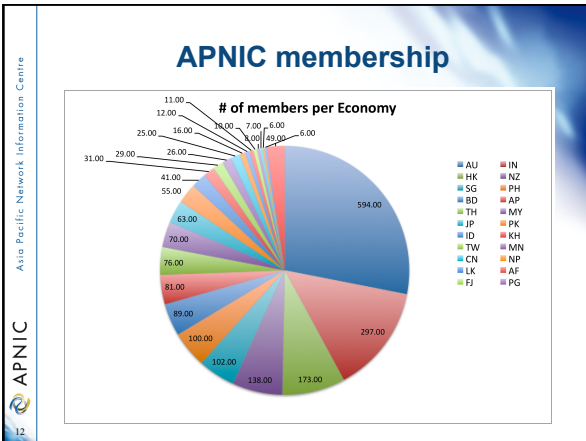
APNIC

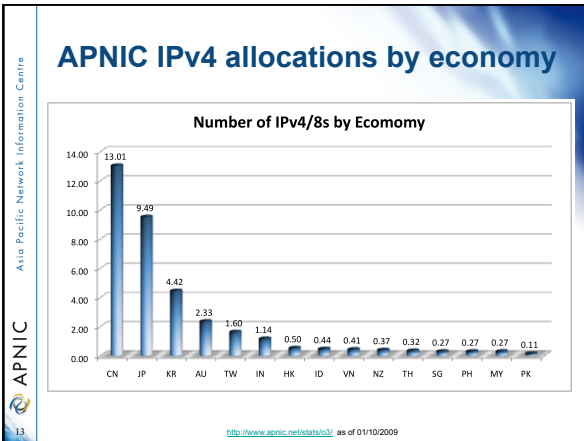
APNIC is NOT

- A network operator
 - Does not provide networking services
 - Works closely with APRICOT forum
- A standards body
 - Does not develop technical standards
 - Works within IETF in relevant areas (IPv6 etc)
- A domain name registry or registrar
 - Will refer queries to relevant parties













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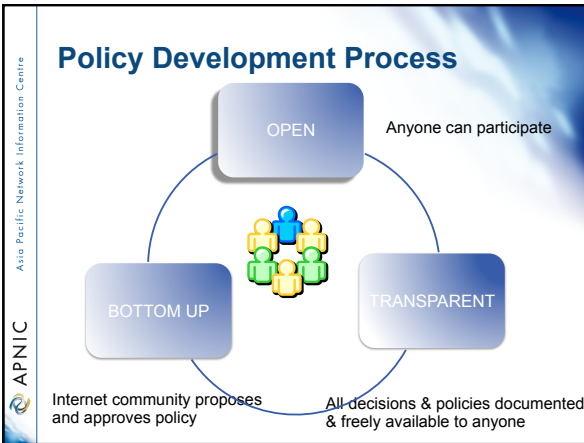
You are part of the APNIC Community!

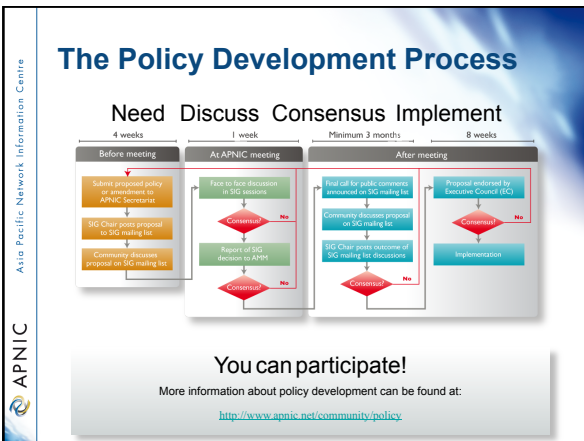
- **Open** forum in the Asia Pacific
 - Open to any interested parties

– A voice in regional Internet operations through participation in APNIC

Participation in policy development

- Why should I bother?
 - Responsibility as an APNIC member
 - To be aware of the current policies for managing address space allocated to you
 - Business reasons
 - Policies affect your business operating environment and are constantly changing
 - Ensure your 'needs' are met
 - Educational
 - Learn and share experiences
 - Stay abreast with 'best practices' in the Internet





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How to Make Your Voice Heard

- Contribute on the public mailing lists
 - <http://www.apnic.net/community/participate/join-discussions/sigs>
 - Attend meetings
 - Or send a representative
 - Watch webcast (video streaming) from the meeting web site
 - Read live transcripts from APNIC web site
 - And express your opinion via Jabber chat
- Give feedback
 - Training or seminar events

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Questions?

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Overview

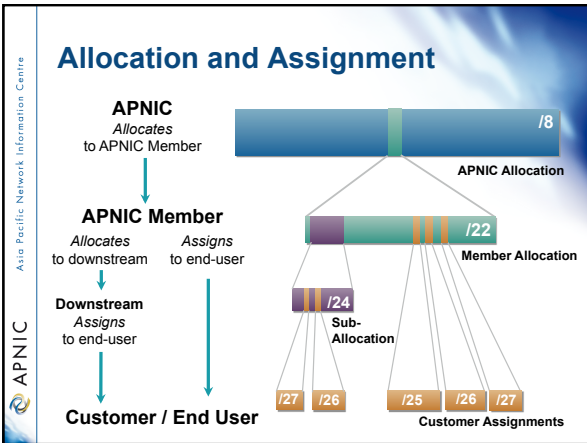
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Allocation and Assignment

Allocation
 "A block of address space held by an IR (or downstream ISP) for subsequent allocation or assignment"
 • Not yet used to address any networks

Assignment
 "A block of address space used to address an operational network"
 • May be provided to ISP customers, or used for an ISP's infrastructure ('self-assignment')



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Portable & non-portable

Portable Assignments

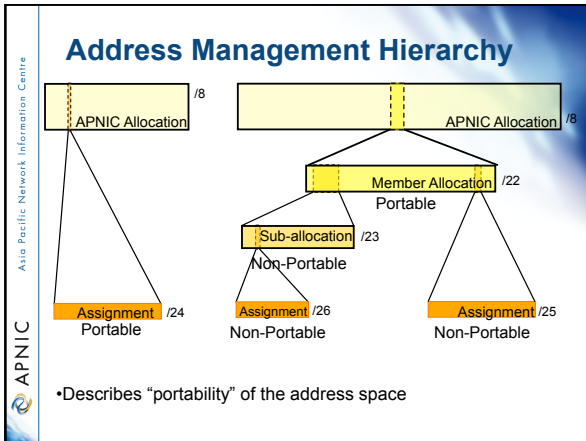
- Customer addresses independent from ISP
 - Keeps addresses when changing ISP
- Bad for size of routing tables
- Bad for QoS: routes may be filtered, flap-dampened

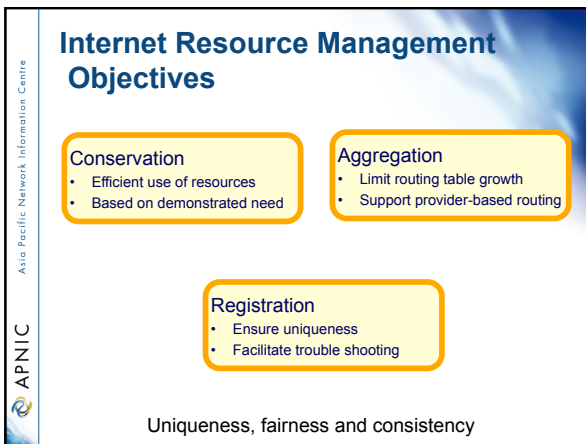
Non-portable Assignments

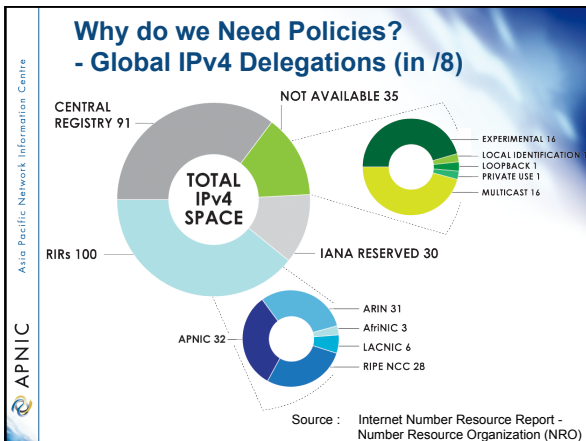
- Customer uses ISP's address space
 - Must renumber if changing ISP
- Only way to effectively scale the Internet

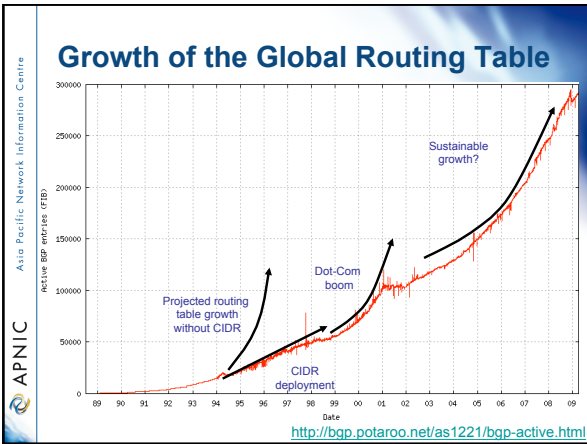
Portable allocations

- Allocations made by APNIC/NIRs









APNIC Policy Environment

"IP addresses not freehold property"

- Assignments & allocations on license basis
 - Addresses *cannot* be bought or sold
 - Internet resources are public resources
 - 'Ownership' is contrary to management goals

"Confidentiality & security"

- APNIC to observe and protect trust relationship
 - Non-disclosure agreement signed by staff

APNIC Allocation Policies

- Aggregation of allocation
 - Provider responsible for aggregation
 - Customer assignments /sub-allocations must be non-portable
- Allocations based on demonstrated need
 - Detailed documentation required
 - All address space held to be declared
 - Address space to be obtained from one source
 - routing considerations may apply
 - Stockpiling not permitted

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Initial IPv4 Allocation

- APNIC minimum IPv4 allocation size /22
 - Two of the criteria for an initial allocation have been updated to show:
 - An ISP must have used a /24 from their upstream provider or demonstrate an immediate need for a /24
 - An ISP must demonstrate a detailed plan for use of a /23 within a year

The diagram illustrates the APNIC /8 address space. It is divided into two main categories: 'Non-portable assignment' and 'Portable assignment'. Within the 'Non-portable assignment' category, a specific /22 member allocation is highlighted. The APNIC logo and the /8 address range are shown at the top of the diagram.

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APNIC Allocation Policies

- Transfer of address space
 - Not automatically recognised
 - Return unused address space to appropriate IR
- Effects of mergers, acquisitions & take-overs
 - Will require contact with IR (APNIC)
 - contact details may change
 - new agreement may be required
 - May require re-examination of allocations
 - requirement depends on new network structure

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Address Assignment Policies

- Assignments based on requirements
 - Demonstrated through detailed documentation
 - Assignment should maximise utilisation
 - minimise wastage
- Classless assignments
 - showing use of VLSM
- Size of allocation
 - Sufficient for up to 12 months requirement

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Portable assignments

- Small multihoming assignment policy
 - For (small) organisations who require a portable assignment for multi-homing purposes

Criteria

- 1a. Applicants currently multihomed
OR
- 1b. Demonstrate a plan to multihome within 1 month

2. Agree to renumber out of previously assigned space

Demonstrate need to use 25% of requested space immediately and 50% within 1 year

APNIC /8

Member allocation

Non-portable assignment

Portable assignment

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Policy for IXP Assignments

- Criteria
 - 3 or more peers
 - Demonstrate “open peering policy”
- APNIC has a reserved block of space from which to make IXP assignments

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Portable Critical Infrastructure Assignments

- What is Critical Internet Infrastructure?
 - Domain registry infrastructure
 - Root DNS operators, gTLD operators, ccTLD operators
 - Address Registry Infrastructure
 - RIRs & NIRs
 - IANA
- Why a specific policy ?
 - Protect stability of core Internet function
- Assignment sizes:
 - IPv4: /24
 - IPv6: /32

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Sub-allocations

- No max or min size
 - Max 1 year requirement
- Assignment Window & 2nd Opinion applies
 - to both sub-allocation & assignments
 - Sub-allocation holders don't need to send in 2nd opinions

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Sub-allocation Guidelines

- Sub-allocate cautiously
 - Seek APNIC advice if in doubt
 - If customer requirements meet min allocation criteria:
 - Customers should approach APNIC for portable allocation
- Efficient assignments
 - ISPs responsible for overall utilisation
 - Sub-allocation holders need to make efficient assignments
- Database registration (WHOIS Db)
 - Sub-allocations & assignments to be registered in the db

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Supporting Historical Resource Transfer

- Bring historical resource registrations into the current policy framework
 - Allow transfers of historical resources to APNIC members
 - the recipient of the transfer must be an APNIC members
 - no technical review or approval
 - historical resource holder must be verified
 - resources will then be considered "current"
- Address space subject to current policy framework

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Evaluation by APNIC

- All address space held should be documented
 - Check other RIR, NIR databases for historical allocations
- 'No reservations' policy
 - Reservations may never be claimed
 - Fragments address space
 - Customers may need more or less address space than is actually reserved

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First Allocation

- Must meet criteria
 - (discussed in policy section)
- Requires clear detailed and accurate request
- Implementation of 'Best Current Practice'
- Efficient assignments planned
- Always a /22 'slow start'
 - Exceptions made for very large networks but not common

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Subsequent Allocations

- 80% overall utilisation
 - Unless large assignment pending
- Demonstrated conservative assignments
- Correct customer registrations in db
 - Need to fix inconsistencies before next allocation
- Allocation size to cover 1 year need
 - Based on previous utilisation rate
- Contiguous allocation not guaranteed
 - But every effort made

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What is an Assignment Window?

“The amount of address space a member may assign without a ‘second opinion’”

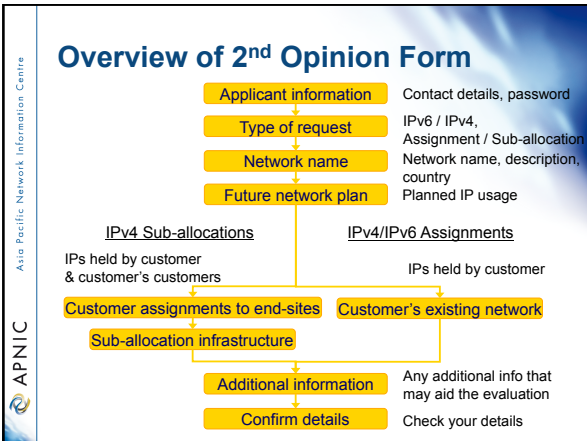
- All members have an AW
 - Starts at zero, increases as member gains experience in address management
- Second opinion process
 - Customer assignments require a ‘second-opinion’ when proposed assignment size is larger than members AW

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Assignment Window

- Size of assignment window
 - Evaluated after about three 2nd-opinion requests
 - Increased as member gains experience and demonstrates understanding of policies
 - Assignment window may be reduced, in rare cases
- Why an assignment window?
 - Monitoring ongoing progress and adherence to policies
 - Mechanism for member education



- ### 2nd Opinion Evaluation (policy)
- Efficiency
 - More than 50% used in any one subnet?
 - Can different subnet sizes be used?
 - More than 80% used for previous assignment?
 - Stockpiling
 - Is all address space held declared on form?
 - Has organisation obtained address space from more than one member/ISP?
 - Registration
 - Is previous assignment in APNIC database and are they correct and up to date?

- ### 2nd Opinion Evaluation
- APNIC & Member evaluation
 - Should be the same
 - If NO, APNIC will ask member to obtain more information
 - iterative process
 - If YES, APNIC approves 2nd opinion request

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2nd Opinion Request Approval

Dear XXXXXXX,

APNIC has approved your "second opinion" request to make the following assignment:

[netname]
[address/prefix]

Please ensure that you update the APNIC whois database to register this assignment before informing your customer or requesting reverse DNS delegation. Do this using the form at:
<http://www.apnic.net/apnic-bin/inetnum.pl>

Important:
Unregistered assignments are considered as "unused"

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Customer Assignment

- Member updates internal records
 - Select address range to be assigned
 - Archive original documents sent to APNIC
 - Update APNIC database
- Clarify status of address space
 - APNIC requirement is 'Non portable'
 - 'Portable' assignments are made by APNIC only with the end-user request form
 - Organisation must have technical requirement

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IPv6 Address Management Hierarchy

```

    graph TD
      IANA[IANA] --- RIR1[RIR]
      IANA --- RIR2[RIR]
      RIR1 --- ISP[ISP]
      RIR1 --- DSISP[Downstream ISP]
      ISP --- Net1[Network]
      DSISP --- Net1
      RIR2 --- Net2[Network]
  
```

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IPv6 Address Policy Goals

- Efficient address usage
 - Avoid wasteful practices
- Aggregation
 - Hierarchical distribution
 - Aggregation of routing information
 - Limiting number of routing entries advertised
- Minimise overhead
 - Associated with obtaining address space
- Registration, Uniqueness, Fairness & consistency

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IPv6 Initial Allocation

- To qualify for an initial allocation of IPv6 address space, an organization must:
 - 1. Not be an end site (must provide downstream services)
 - 2. Plan to provide IPv6 connectivity to organizations to which it will make assignments, by advertising that connectivity through its single aggregated address allocation
 - 3. Meet one of the two following criteria:
 - Have a plan for making at least 200 assignments to other organizations within two years OR
 - Be an existing ISP with IPv4 allocations from an APNIC or an NIR, which will make IPv6 assignments or sub-allocations to other organizations and announce the allocation in the inter-domain routing system within two years

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IPv6 Initial Allocation

- Private networks (those not connected to the public Internet) may also be eligible for an IPv6 address space allocation provided they meet equivalent criteria to those listed above.
- Initial allocation size is /32
 - Default allocation (“slow start”)

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IPv6 Initial Allocation

- Initial allocations larger than /32 may be justified if:
 - 1. The organization provides comprehensive documentation of planned IPv6 infrastructure which would require a larger allocation; or
 - 2. The organization provides comprehensive documentation of all of the following:
 - its existing IPv4 infrastructure and customer base,
 - its intention to provide its existing IPv4 services via IPv6, and
 - its intention to move some of its existing IPv4 customers to IPv6 within two years.

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End Site Assignment Policy for IPv6

- Any size longer than /48
 - Decision is up to ISPs or ISPs
 - Implication: any size between /64 - /48
 - Global coordination is required
 - Assuming the HD ratio changes to a larger value
 - HD ratio measurement unit: /48 => /56
 - Implication: Register all assignments shorter than /56?
 - HD ratio: 0.8 => 0.94

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Subsequent Allocation

- Must meet HD = 0.94 utilisation requirement of previous allocation (subject to change)
- Other criteria to be met
 - Correct registrations (all /48s registered)
 - Correct assignment practices etc
- Subsequent allocation results in a doubling of the address space allocated to it
 - Resulting in total IPv6 prefix is 1 bit shorter
 - Or sufficient for 2 years requirement

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IPv6 Utilisation

- Utilisation determined from end site assignments
 - ISP responsible for registration of all /48 assignments
 - Intermediate allocation hierarchy not considered
- Utilisation of IPv6 address space is measured differently from IPv4
 - Use HD ratio to measure
- Subsequent allocation may be requested when IPv6 utilisation requirement is met

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IPv6 Assignment and Utilisation Requirement

- IPv6 assignment and utilisation requirement policy
 - HD ratio: 0.94
 - Measurement unit: /56
- The HD ratio threshold is
 - $HD = \log(\text{units assigned}) / \log(16,777,216)$
 - $0.94 = 6,183,533 \times /56$ units
- Calculation of the HD ratio
 - Convert the assignment size into equivalent /56 units
 - Each /48 end site = $256 \times /56$ units
 - Each /52 end site = $16 \times /56$ units
 - Each /56 end site = $1 \times /56$ units
 - Each /60 end site = $1/16 \times /56$ units
 - Each /64 end site = $1/256 \times /56$ units

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IPv6 Utilisation (HD = 0.94)

- Percentage utilisation calculation

IPv6 Prefix	Site Address Bits	Total site address in /56s	Threshold (HD ratio 0.94)	Utilisation %
/42	14	16,384	9,153	55.9%
/36	20	1,048,576	456,419	43.5%
/35	21	2,097,152	875,653	41.8 %
/32	24	16,777,216	6,185,533	36.9%
/29	27	134,217,728	43,665,787	32.5 %
/24	32	4,294,967,296	1,134,964,479	26.4 %
/16	40	1,099,511,627,776	208,318,498,661	18.9 %

RFC 3194
"In a hierarchical address plan, as the size of the allocation increases, the density of assignments will decrease."

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IXP IPv6 Assignment Policy

- Criteria
 - Demonstrate 'open peering policy'
 - 3 or more peers
- Portable assignment size: /48
 - All other needs should be met through normal processes
 - /64 holders can "upgrade" to /48
 - Through NIRs/ APNIC
 - Need to return /64

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IPv6 Portable Assignment for Multi-homing

- The current policy allows for IPv6 portable assignment to end-sites
 - Size: /48, or a shorter prefix if the end site can justify it
 - To be multihomed within 3 months
 - Assignment from a specified block separately from portable allocations address space

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How do I Apply for IPv6 Addresses?

```

    graph TD
      A[Check your eligibility for IPv6 addresses] --> B[Read IPv6 policies  
http://www.apnic.net/policy/ipv6-address-policy  
Read IPv6 guideline  
http://www.apnic.net/publications/media-library/corporate-documents/resource-guidelines/ipv6-guidelines]
      B --> C[Do you have an APNIC account?  
If not, become an APNIC member or open a non-member account]
      C --> D[Complete an IPv6 address request form]
      D --> E[Submit the form hostmaster@apnic.net]
      E --> F[Questions:  
email: helpdesk@apnic.net  
Helpdesk chat: http://www.apnic.net/helpdesk]
    
```

Questions:
email: helpdesk@apnic.net
Helpdesk chat: <http://www.apnic.net/helpdesk>

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APNIC IPv6 Delegation by Economy

IPv6 Number of IPv6/32s

Economy	IPv6 Number of IPv6/32s
JP	8,343.25
AU	8,200.11
KR	5,203.00
TW	2,310.00
CN	0.00
NZ	0.00
ID	0.00
SG	0.00
MY	0.00
IN	0.00
HK	0.00
PH	0.00
TH	0.00
VN	0.00
PK	0.00

No of delegations (35, /32) <http://www.apnic.net/stats/03/> as of 26/03/2009

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Overview

- Access to MyAPNIC
- Digital certificate issue and renewal
- Manage your membership
- Manage your resource

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Accessing MyAPNIC

MyAPNIC

- Corporate contacts can log in MyAPNIC immediately after confirming registration in an email sent by MyAPNIC
- Non corporate contacts to register for MyAPNIC access and approved by the corporate contacts.

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APNIC Digital Certificate

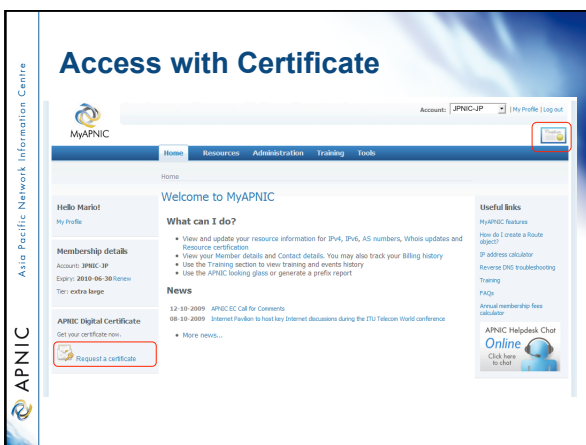
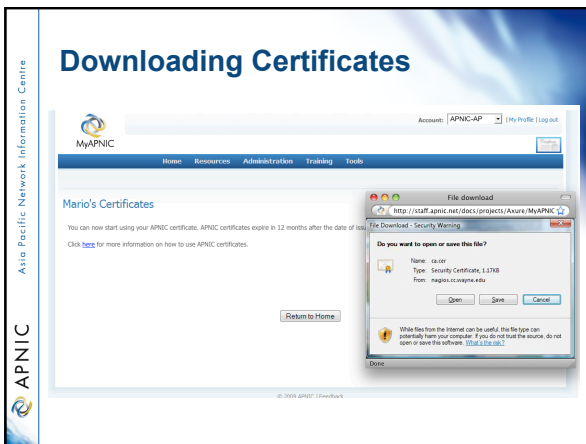
MyAPNIC

- Certificate issue and renewal are via MyAPNIC (ie request and download)
- Corporate contacts have certificate pre-approval
- Non-corporate contact certificate requests can be approved by the Corporate contact
 - the certificate is ready after login

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Certificate Renew

- Automated, renewal request is not required
- New certificates are ready for download 30 days prior to expiry date
- Email notification sent to contacts



MyAPNIC Registration

MyAPNIC / Register

Registration

Your details

Username: (help)

Password (at least 8 characters): (help)

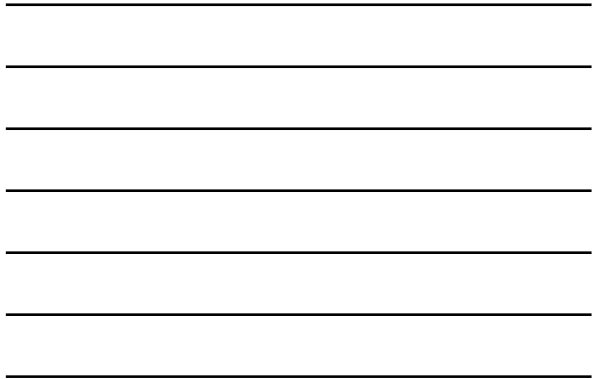
Confirm password: (help)

Full name: (help)

Email address: (help)

Member account name: (help)

© 2009 APNIC | Feedback



MyAPNIC Registration

MyAPNIC / Register

Registration

Your registration

Success

You have successfully registered for MYAPNIC-TEST AP.
Your authorization code is 539KRG3D30.

Please provide your authorization code to one of your corporate contact(s) below for approval to access MyAPNIC:

- George Kuo
- Toni H.
- George K.
- test person

You will receive an email confirming your registration.
Your corporate contact(s) will receive an email informing them of your request for approval to access MyAPNIC.

- [Login](#)



MyAPNIC Registration

George [APNICTRAINING-AD] | Contacts and users | My profile | Log out

This area currently impersonating from user vivek to user gk.

Home | Voting | Resources | **Administration** | Training | Tools

Member details | Contact details | Registration list | Billing history | Annual fee calculator | Correspondence

Home / Administration / Registrations

Registrations

Pending registration requests

Date (UTC)	Username	Email address	Authorization code	Approve registration	Reject registration
2010-01-01 09:00:00	toni	toni@apnic.net	<input type="text"/>	<input type="button" value="Approve"/>	<input type="button" value="Reject"/>
2009-11-22 23:42:29	thp@idfl	vivek@apnic.net	<input type="text"/>	<input type="button" value="Approve"/>	<input type="button" value="Reject"/>
2009-11-20 06:39:49	bob@idfl	vivek@apnic.net	<input type="text"/>	<input type="button" value="Approve"/>	<input type="button" value="Reject"/>
2009-10-15 06:16:21	TestUser1	vngam@hotmail.com	<input type="text"/>	<input type="button" value="Approve"/>	<input type="button" value="Reject"/>

Approved registration requests

Date (UTC)	Username
2009-12-07 01:54:02	afishof@K214
2009-11-20 05:50:55	happytest
2009-10-01 06:09:16	sonat
2009-08-11 07:38:11	reggie1
2009-04-11 02:27:14	Champ



Manage your membership

APNIC Asia Pacific Network Information Centre

Member details

Account: APNIC TRAINING AU
 Star: Australia
 Country/territory: AUSTRALIA
 Organisation: APNIC TRAINING UNIT
 Office address: LEVEL 1, 33 PARK RD
 Billing address: Attention: Andy Asano / Champa Wijatunga / Cost Gordon
 LEVEL 1, 33 PARK RD
 Phone: +61-7-3850339
 Fax: +61-7-3850339
 City: Milton
 State: QLD
 Post code: 4074
 Country: AUSTRALIA
 Logo URL:
 Website:

Contact Management

Warning: Deleting a contact person will disable that person's access to MyAPNIC for this membership (if the person previously has access to MyAPNIC)

Approve user registration

Pending requests: There are pending MyAPNIC user registrations. Please click on the link below to approve the requests.

- Approve user registration

Registered member contacts

Full name	Email (edit)	Job title	MyAPNIC username	Corporate	Billing	Technical	Actions
Rafael Santiago	rafae@mydestin		[+]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Delete Approve
Joey Mirador	joey_m@mydestin			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Delete Approve
Donald Tita	d_tita@mydestin			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Delete Approve
Joey Example	joey@example.com		[+]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Delete Approve
testing 2	arh@apnic.net		[+]	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Delete Approve
Micky Mouse	arh@drakey.net		[+]	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Delete Approve

Add new contact person

Full name	Email	Job title	MyAPNIC username	Corporate	Billing	Technical
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Annual fee calculator

APNIC Asia Pacific Network Information Centre

Annual membership fee calculator

Use this tool as a guide to estimate APNIC fees based on your resource holdings.

Your fees are based on the higher of the following:

Resource	Total	Fee
IPv4	274	\$1,180
IPv6	748	\$1,180

Resource fee based on resource holdings as of 25 Jan 2010

Fee based on the table above: \$1,180

Total fee¹: \$1,180

Add or remove resources

Resource	Add	Remove	Total	Fee
IPv4	258	24	532	\$1,534
IPv6	258	258	258	\$1,180

Resource fee based on projected holdings

Your fees are based on the higher amount of the above: \$1,534

Total fee¹: \$1,534

Asia Pacific Network Information Centre

Manage your resource

Shahk [APNIC-AP] | Contacts and Users | My Profile | Log out

You are currently responsible for your account to your subresources.

Home | Voting | **Resources** | Administration | Training | Tools

IPv4 | IPv6 | ASN | Whois updates | Certification | Maintainers | Correspondence

Home / Resource management

Resource management

Internet resources

Use MyAPNIC to view and update your information about the following Internet resources:

- IPv4
- IPv6
- ASN
- Whois updates
- Certification
- Maintainers
- Correspondence

Resource request forms

Request more:

- IPv4 addresses
- IPv6 addresses
- IPv6 addresses (via one-click)
- AS numbers

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Just one click...

Shahk [APNIC-AP] | Contacts and Users | My Profile | Log out

You are currently responsible for your account to your subresources.

Home | Voting | Resources | Administration | Training | Tools

IPv4 | IPv6 | ASN | Whois updates | Certification | Maintainers | Correspondence

Home / Resource management / One-Click IPv6

One-Click IPv6

- Based on your current IPv4 holding, you are eligible for a /32 IPv6 allocation.
- The IPv6 allocation will not affect your annual membership fee.

Please click "Confirm" button below to accept the allocation.

Confirm

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And you have your IPv6!

Shahk [APNIC-AP] | Contacts and Users | My Profile | Log out

You are currently responsible for your account to your subresources.

Home | Voting | Resources | Administration | Training | Tools

IPv4 | IPv6 | ASN | Whois updates | Certification | Maintainers | Correspondence

Home / Resource management / One-Click IPv6

One-Click IPv6

Success

You have been delegated:
IPv6: 2404:3400::/32
A confirmation email has been sent to x.sahk@tqghbo.com.

What's details:

```
asn:asnm2 2404:3400::/32
asname APNIC-AS
descr APNIC - Regional Plan - LIVE in future.
country AP
admin-c 83193-AP
tech-c 83193-AP
mnt-lower MAINT-AP-APNIC
mnt-by APNIC-DB
created ALLOCATED PORTABLE
changed 09-nov-2009@apnic.net 20100129
source APNIC
```

The screenshot shows the MyAPNIC IPv4 Resources page. The page title is "IPv4 Resources". The navigation menu includes Home, Resources, Administration, Training, and Tools. The Resources menu is expanded, showing IPv4, IPv6, ASN, Whois updates, Maintainers, and Correspondence. The main content area is titled "IPv4 resources" and contains several action links: "Add reverse DNS domain object", "Add public assignment", "Add private assignment", and "Request more IPv4 addresses". Below these links is a table with columns: Start IP, Length, Date, Usage, Assignment status, Reverse DNS, Private, and Public. A single row is visible with Start IP "203.178.188.0", Length ".0/4", Date "2008-04-24", Usage "100%", and Assignment status "update". There are also "Select All" and "Download as ZIP" buttons. A legend at the bottom shows color-coded boxes for usage percentages: < 20%, 20%, 30%, 40%, 50%, 60%, 70%.

The screenshot shows the MyAPNIC IPv6 Resources page. The page title is "IPv6 Resources". The navigation menu is the same as the IPv4 page. The Resources menu is expanded, showing IPv4, IPv6, ASN, Whois updates, Maintainers, and Correspondence. The main content area is titled "IPv6 resources" and contains several action links: "Bulk reverse delegations", "Add public assignment", "Add private assignment", and "Request more IPv6 addresses". Below these links is a table with columns: Start IP, Length, Date, Assignment status, and Downloaded public. A single row is visible with Start IP "2001:0270:0001::/48", Length "/48", Date "2006-04-24", Assignment status "100%", and Downloaded public "0". There are also "Select All" and "Download as ZIP" buttons. A legend at the bottom shows color-coded boxes for usage percentages: < 0.2 HD, 0.2 HD, 0.4 HD, 0.6 HD, 0.8 HD, 0.8 HD.

The screenshot shows the MyAPNIC AS Number Resources page. The page title is "AS number Resources". The navigation menu is the same as the previous pages. The Resources menu is expanded, showing IPv4, IPv6, ASN, Whois updates, Maintainers, and Correspondence. The main content area is titled "AS Numbers" and contains several action links: "Upload", "Download", and "Request more AS numbers". Below these links is a table with columns: AS Number, and a grid of empty cells. A single row is visible with AS Number "4510" and "131107".

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AS number Resources

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Useful tools

APNIC Asia Pacific Network Information Centre

Questions?

Asia Pacific Network Information Centre
APNIC

Overview

- IRMe
 - Introduction to APNIC
 - APNIC policy development process
 - Internet registry policies
 - IP address request (Demo)
 - Second opinion request
 - IPv6 Policy and Procedure
 - MyAPNIC (Demo)
 - **Reverse DNS**
 - APNIC Helpdesk

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APNIC

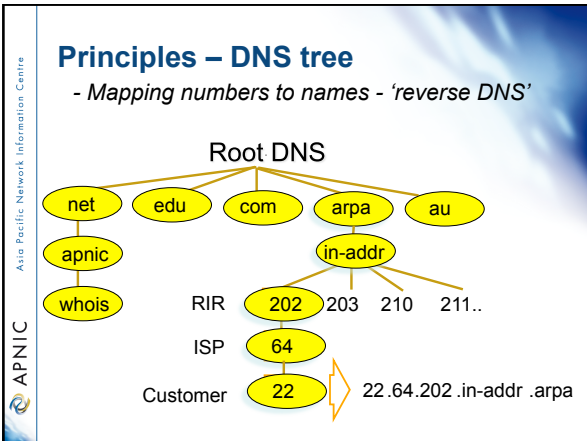
Reverse DNS - why bother?


- Service denial
 - That only allow access when fully reverse delegated eg. anonymous ftp
- Diagnostics
 - Assisting in trace routes etc
- Spam identification
- Registration
 - Responsibility as a member and Local IR

Asia Pacific Network Information Centre
APNIC

APNIC & Member responsibilities

- APNIC
 - Manage reverse delegations of address block distributed by APNIC
 - Process members requests for reverse delegations of network allocations
- Members
 - Be familiar with APNIC procedures
 - Ensure that addresses are reverse-mapped
 - Maintain nameservers for allocations
 - Minimise pollution of DNS



- Reverse delegation requirements**
- /24 Delegations
 - Address blocks should be assigned/allocated
 - At least two name servers
 - Can ask APNIC to be the secondary zone
 - /16 Delegations
 - Same as /24 delegations
 - APNIC delegates entire zone to member
 - Recommend APNIC secondary zone
 - < /24 Delegations
 - Read "classless in-addr.arpa delegation" 

A reverse zone example

```

$ORIGIN 1.168.192.in-addr.arpa.
@ 3600 IN SOA test.company.org. (
    sys\,admin.company.org.
    2002021301 ; serial
    1h ; refresh
    30M ; retry
    1W ; expiry
    3600 )
    ; neg.
anws. ttl

NS ns.company.org.
NS ns2.company.org.

1 PTR gw.company.org.
  PTR router.company.org.

2 PTR ns.company.org.

;auto generate: 65 PTR host65.company.org
$GENERATE 65-127 $ PTR host$.company.org.

```

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Example 'domain' object

```

domain:      124.54.202.in-addr.arpa
descr:      co-located server at mumbai
country:    PK
admin-c:    VT43-AP
tech-c:     IA15-AP
zone-c:     IA15-AP
nserver:    dns.isp.net.pk
nserver:    giasbm01.isp.net.pk
mnt-by:     MAINT-PK-isp
changed:    gps@isp.net.pk 20010612
source:     APNIC
  
```

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Adding Domain Object to WHOIS

- Using My APNIC (Instant)
- Sending Domain object template to APNIC Helpdesk (1 working day)
- Name servers must be configured before submitting request

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Delegation procedures – request form

- Complete the documentation
 - <ftp://ftp.apnic.net/apnic/docs/reverse-dns>
- On-line form interface
 - Real time feedback
 - Gives errors, warnings in zone configuration
 - serial number of zone consistent across nameservers
 - nameservers listed in zone consistent
 - Uses database 'domain' object
 - examples of form to follow..

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APNIC

Evaluation

- Parser checks for
 - 'whois' database
 - IP address range is assigned or allocated
 - Must be in APNIC database
 - Maintainer object
 - Mandatory field of domain object
 - Nic-handles
 - zone-c, tech-c, admin-c

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APNIC

Questions?

Asia Pacific Network Information Centre
APNIC

Overview

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 - Reverse DNS
- **APNIC Helpdesk**

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APNIC

Member Services Helpdesk

-One point of contact for all member enquiries
-Online chat services



Helpdesk hours
9:00 am - 7:00 pm (AU EST, UTC + 10 hrs)
ph: +61 7 3858 3188 fax: 61 7 3858 3199

- **More personalised service**
 - Range of languages: Cantonese, Filipino, Mandarin, Thai, Vietnamese etc.
- **Faster response and resolution of queries**
 - IP resource applications, status of requests, obtaining help in completing application forms, membership enquiries, billing issues & database enquiries

Asia Pacific Network Information Centre

APNIC

APNIC Helpdesk Chat



The Helpdesk gives members and clients direct access to APNIC Helpdesk to resolve all enquiries.

Helpdesk
09:00 to 19:00 (UTC+10 hours)

Phone: +61 7 3858 3188
Fax: +61 7 3858 3199
Email: helpdesk@apnic.net

Note: Please send all requests for resources to Hostmaster with your APNIC ID.

Helpdesk queries:

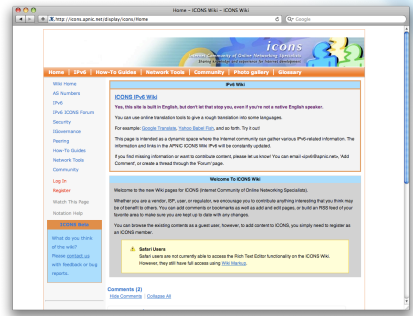
- Status of requests
- Membership enquiries
- Billing issues
- Database enquiries

Multi language helpdesk:
Burmese, Indonesian, Bengali, Cantonese, English, Filipino (Tagalog), Hindi, Mandarin and

Asia Pacific Network Information Centre

APNIC

ICONS



Welcome to the new Web pages for ICONS (Internet Community of Online Networking Specialists).

ICONS is a free e-mailing, IP, chat or regular, two-way message site to facilitate meeting networking that you think may be of benefit to others. This site and contents are continuously updated as well as web pages, to build an ICSO base of your knowledge and to help you and others to learn and share.

For more information on ICONS, please visit our ICONS website or contact us via our ICONS website. You can also contact us via our ICONS website or contact us via our ICONS website.

Welcome to ICONS Web

ICONS Web is a free e-mailing, IP, chat or regular, two-way message site to facilitate meeting networking that you think may be of benefit to others. This site and contents are continuously updated as well as web pages, to build an ICSO base of your knowledge and to help you and others to learn and share.

You can browse the existing contents as a guest user. However, to add content to ICONS, you simply need to register as an ICONS member.

Get Users who are currently able to access the Rich Text Editor functionality on the ICONS Web. However, they will have full access only if they are logged in.

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Questions?

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Training Survey

- <http://www.tiny.cc/apnictrainingsurvey>

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Thank you!
