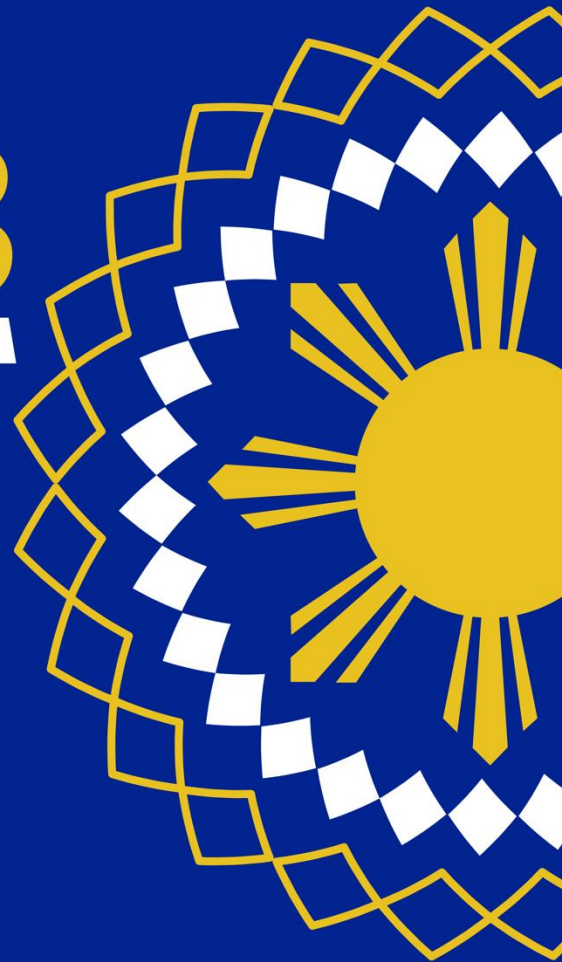


2023 APRICOT APNIC 55

MANILA, PHILIPPINES

20 February – 2 March 2023

[#apricot2023](#)





2022 Interview Locations	
Australia	Macau Special Administrative Region of China
Bangladesh	Nepal
Bhutan	New Zealand
Cambodia	Pakistan
China	Papua New Guinea
Fiji	Philippines
Hong Kong Special Administrative Region of China	Republic of Korea
India	Sri Lanka
Indonesia	Taiwan
Japan	Thailand
Kiribati	Vanuatu
Malaysia	Viet Nam
Mongolia	

25

Economies

Key Interview Findings

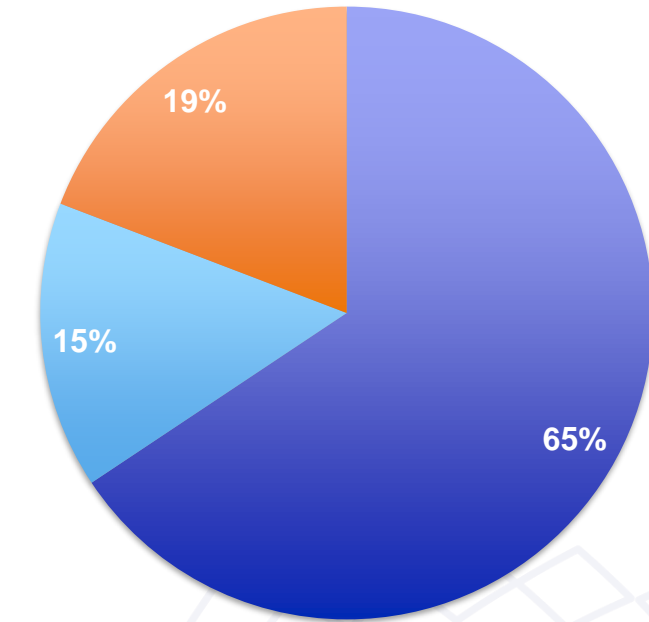
- COVID-19 affected demand, supply chains and workforce
- Internet security, and deploying IPv6 were the major challenges mentioned
- Online meetings, training, conferences, and other forums are no substitute for the “real thing”.
- APNIC is consistently described as being highly regarded, trusted, reliable, and professional.
- Equal access to the Internet for small and LDE, and educating the ‘next generation’ about the Internet are important issues

Region	Count	%
East Asia	269	17%
Oceania	275	17%
South East Asia	454	28%
South Asia	486	30%
Non-APNIC Region	137	8%
Total	1,621	100%

61%

Have never
completed the
APNIC survey
before

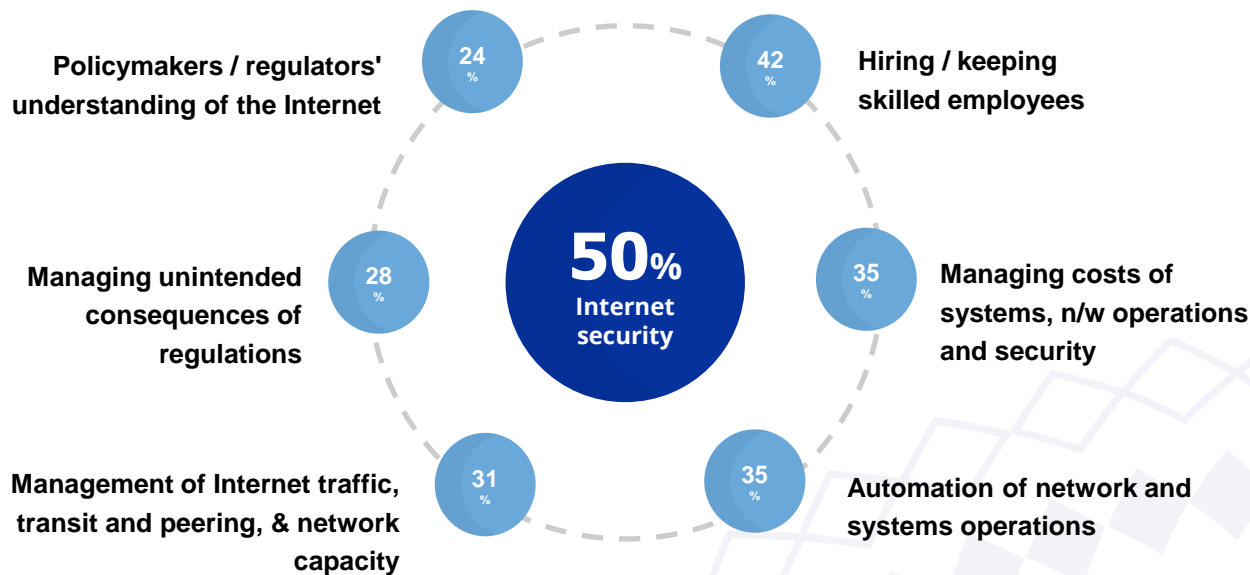
Membership Status



- APNIC Member
- Member of NIR in APNIC Region
- Other Stakeholder



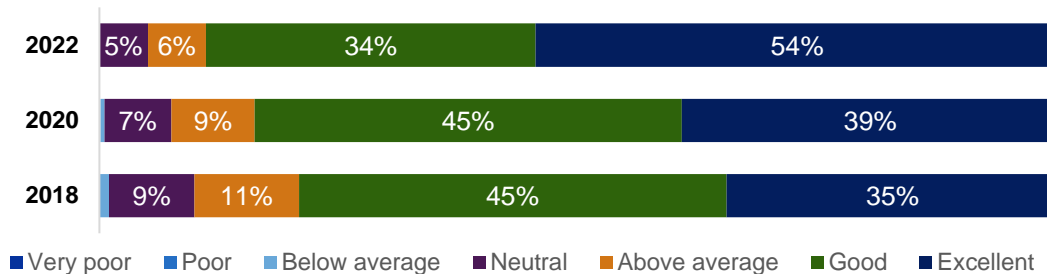
Biggest strategic and operational challenges



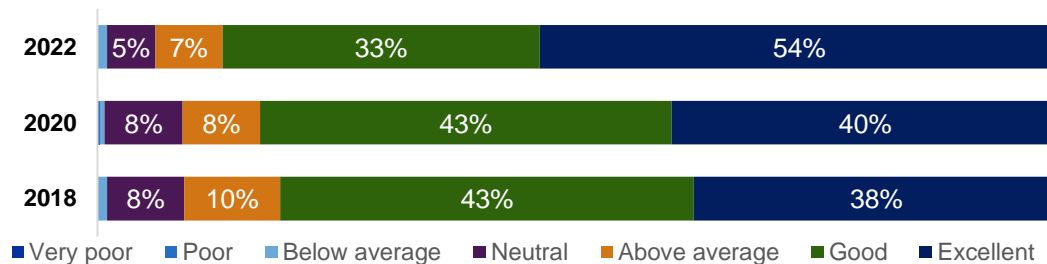
Service Satisfaction

#apricot2023

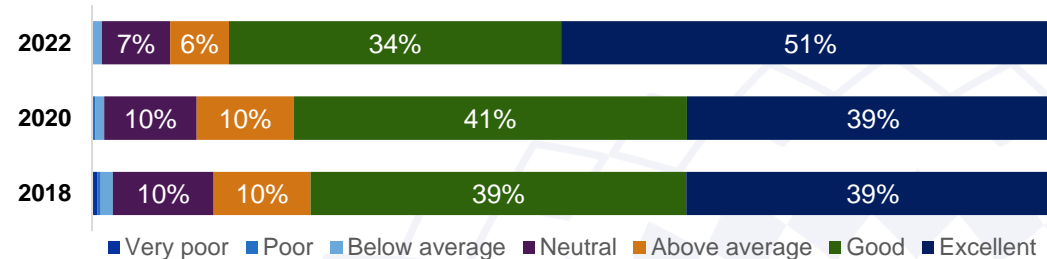
Quality of services



Value of services



Value of membership

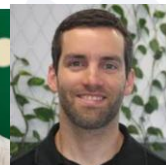
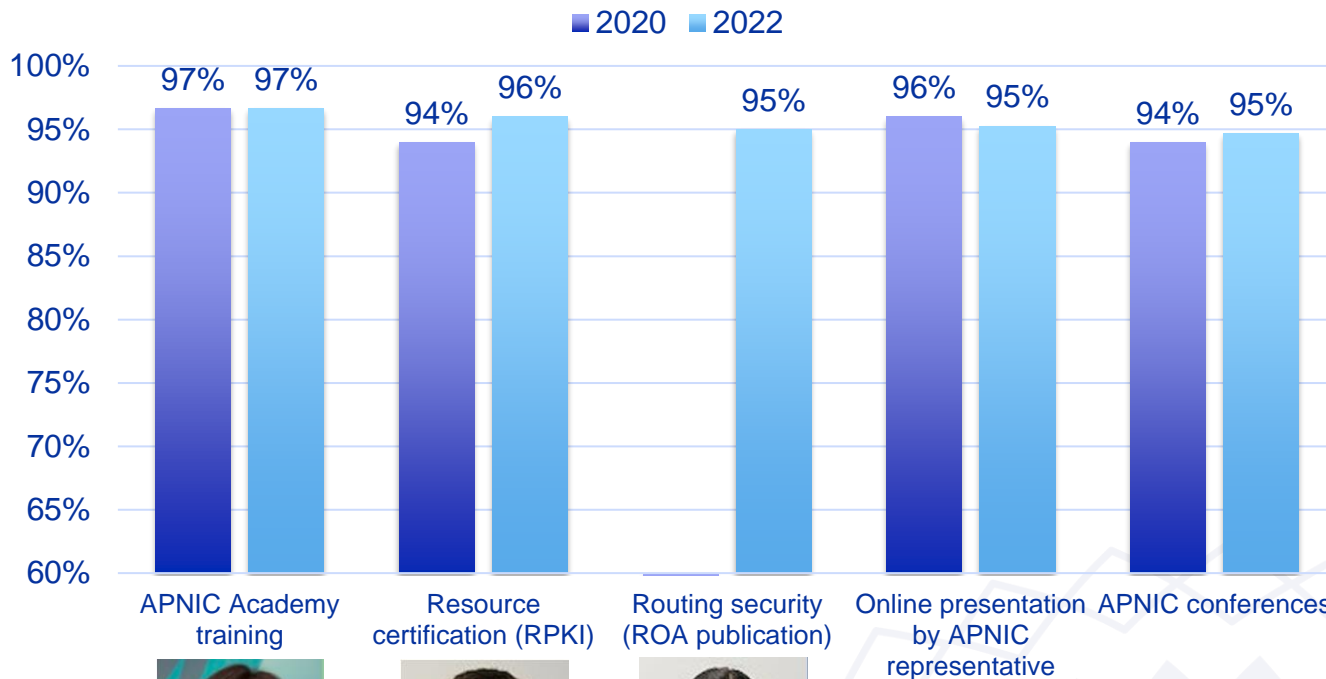




Top rated APNIC Services

#apricot2023

Thinking about APNIC services you have used, how would you rate your experience? % Above average, Good, Excellent



APNIC 55



How can APNIC Help?

Overwhelmingly Members talked about continued provision of training and education as the best form of assistance



Training

35% mentioned training, including advanced training in IPv6

Security

8% mentioned Internet security training, including how to mitigate against attacks

Case studies

11% want case studies, best practice videos and blogs

Awareness

6% called for better education / awareness to governments about the Internet

Internet Development Priorities for Investment

Investment in internet infrastructure, particularly in backbone networks or undersea cables is important to many.

Technical training for new or emerging network engineers is also important to Members

35
%



Infrastructure Investment

Of those, 46% want to see investment in backbone networks (undersea/satellite), while 43% prioritise peering, and 37% neutral IXPs

34
%



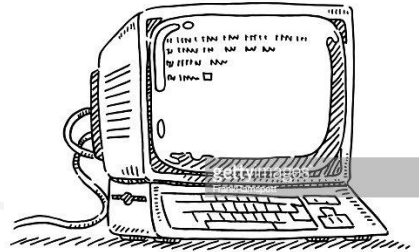
Human Resource Capacity Building

Investment in more technical training for network engineers is the priority for 59% of Members. Others would prefer scholarships or internships at APNIC (38%) or fellowships for the next generation of network engineers (35%)

Historical Resource Transition — Update

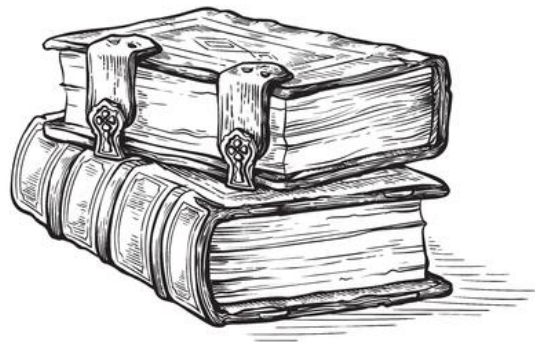
Vivek Nigam

vivek@apnic.net



Historical Resources

- Pre-RIR delegations
 - Resources distributed by InterNIC, AUNIC, and so forth
- No formal agreement with APNIC
- Not managed under policy framework



www.apnic.net/historical-about

EC Resolution

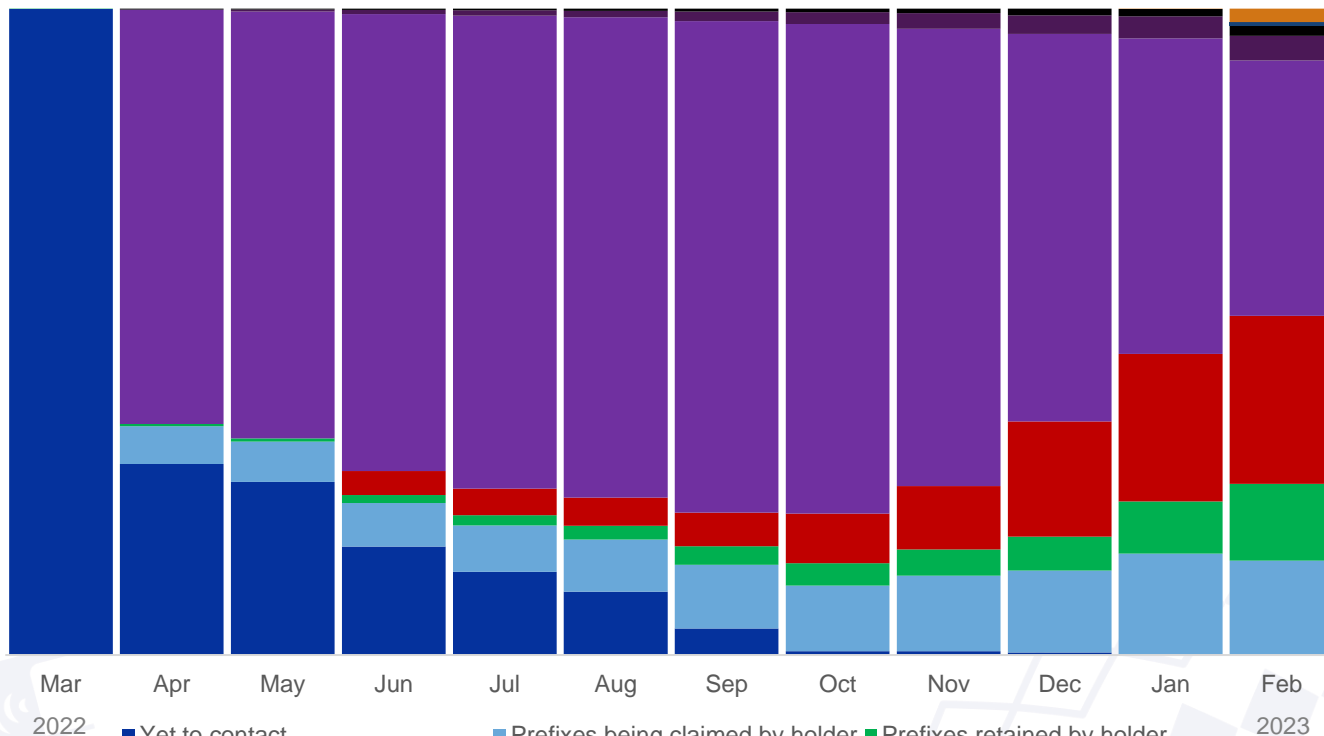
Resolution 2021-09: RESOLVES that all historical resource holders will need to become, or remain, a Member or Non-Member of APNIC on and from 1 January 2023, in order to continue to receive registry services from APNIC.

Number of unclaimed historical prefixes

Prefix size	Number of prefixes
/15	1
/16	85
/17	1
/18	3
/19	10
/20	38
/21	59
/22	183
/23	404
/24	3,148

Number of IPs: 7.3 million
Number of prefixes: 3,932
Number of cases: 3,355

Case outcome snapshot



#apricot2023

■ Yet to contact
■ Not contactable
■ Prefixes returned to APNIC

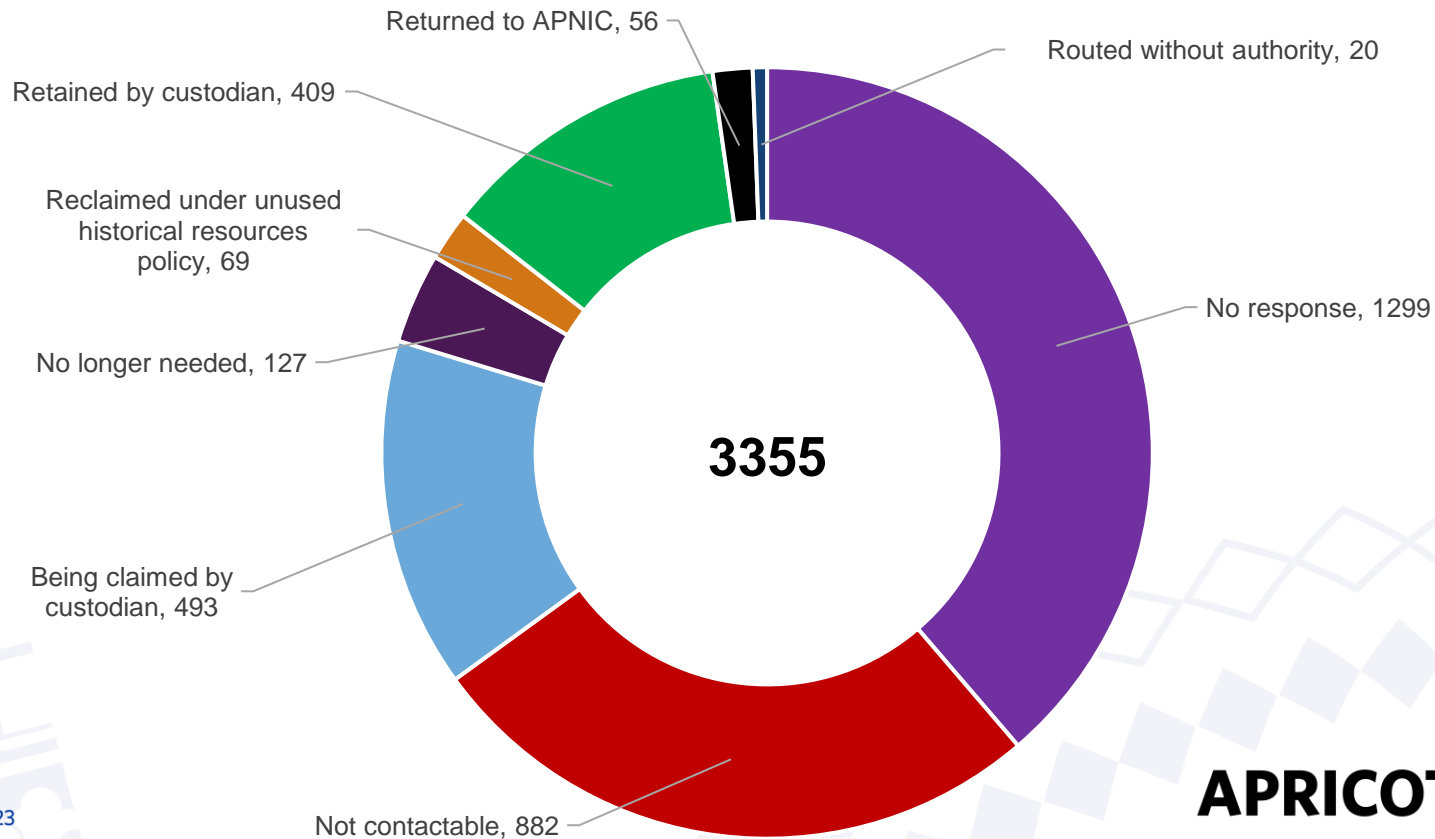
■ Prefixes being claimed by holder
■ Prefixes retained by holder
■ No response

■ Routed Without Authority
■ Prefixes no longer needed
■ Prefixes reclaimed under policy

APRICOT 2023
APNIC 55



Case outcomes



Retained by custodian

- Cases: 409
- IP addresses: 2,165,504
 - Resources claimed under APNIC accounts
 - Whois registration updated (Org Object, IRT object ...)

Returned to APNIC

- Cases: 56
- IP addresses: 85,760
 - Custodians completed declaration form to renounce their historical resource
 - Resources recycled

Reclaimed under 'Recovery of unused historical resource policy'

- Cases: 69
- IP addresses: 613,888
 - Historical resources have never been routed
 - Unable to contact custodians
 - Resources recycled

No longer needed

- Cases: 127
- IP addresses: 42,752
 - Custodians informed us they no longer need their historical resources
 - Unable to complete declaration form to renounce their resource
 - Resource registration removed and status changed to 'Reserved'

Not contactable

- Cases: 882
- IP addresses: 694,016
 - Whois contact details outdated
 - No public contact details could be found
 - Prefixes not routed
 - Resource registration removed and status changed to 'Reserved'

No response

- Cases: 1299 (158 routed)
- IP addresses: 1,927,936 (645,632 routed)
 - Multiple emails sent to custodians and/or ASN routing the prefix
 - No response received
 - Will send final reminder failing which we will remove the resource registration and change status to 'Reserved'

Being claimed by custodians

- Cases: 493 (224 routed)
- IP addresses: 1,776,640 (937,728 routed)
 - Resource claim form not completed
 - Pending Membership applications (some refused)
 - Will send final reminder failing which we will remove the resource registration and change status to 'Reserved'

Routed without authority

- Cases: 20
- IP addresses: 35,584
 - Custodians informed they no longer need their historical resource
 - Upstream ASN continues to announce them
 - Will send final reminder to stop announcing the prefix failing which we will remove the resource registration and change status to 'Reserved'

Summary

- Retained by custodians: 409 cases (2,165,504 IPs)
- Recycled: 125 cases (699,648 IPs)
- Registration removed: 1,009 cases (736,768 IPs)
- Pending
 - Non-routed cases: 1,410 (2,121,216 IPs)
 - Routed cases: 402 (1,618,944 IPs)

Membership Products

Andre Gelderblom

Product Manager (Membership)

Agenda

- Changes to Account Contacts
- Orbit
- Product Roadmap

Changes to Account Contacts

Current Challenges

- **Identity & authentication confusion**

- "Contact email" is often confused with the "Login email"
- Both emails can be used for Authentication

- **Security**

- Alarming rising successful cyber attacks on large companies
- Rise in amount of known compromised credentials through 3rd parties as reported by Trustwave security

Login Email: Authentication

Log in

Email
john.doe@gmail.com

☐ Remember me

Next

Need help logging in?

Do not have an APNIC Login? [Register](#)

Login Email and
Contact Email
are different

Contact Email: Communication

[Add new contact](#)

Showing 5 entries

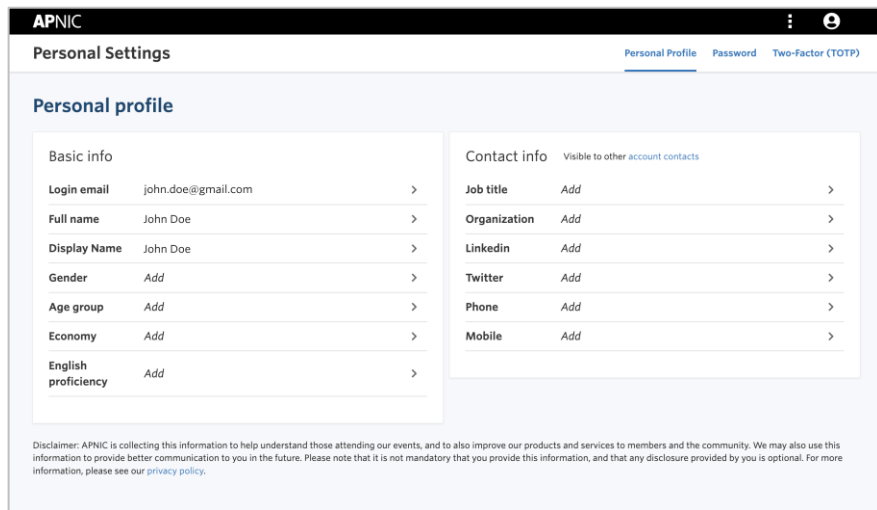
Full name	Email	Phone	Mobile	Job title	Corporate ?	Billing ?	Technical ?	Edit ?	Delete ?	Permissions ?
John Doe	jd@company.com			Finance Manager		*		Edit	Delete	Permissions
Garth Vader	dv@company.com			CEO			*	Edit	Delete	Permissions
Harry Potter	harry@company.com			Network Engineer			*	Edit	Delete	Permissions
Sherlock Holmes	sherlock@company.com			CTO			*	Edit	Delete	Permissions
Winnie the Pooh	winnie@company.com			Network Engineer	*		*	Edit	Delete	Permissions

Showing 1 to 5 of 16 entries

« 1 2 3 4 »

Proposed Changes

- Remove the confusion & improve the security
 - All Account Contacts must have an APNIC Login
 - Retire Account Contacts without an APNIC Login
 - Mandatory 2-Factor for all Account Contacts



The screenshot displays the APNIC Personal Settings interface. At the top, there's a navigation bar with 'APNIC' on the left and a user profile icon on the right. Below this, the 'Personal Settings' header is followed by three tabs: 'Personal Profile' (selected), 'Password', and 'Two-Factor (TOTP)'. The main content area is titled 'Personal profile' and contains two side-by-side tables.

Basic info		
Login email	john.doe@gmail.com	>
Full name	John Doe	>
Display Name	John Doe	>
Gender	Add	>
Age group	Add	>
Economy	Add	>
English proficiency	Add	>

Contact info <small>Visible to other account contacts</small>		
Job title	Add	>
Organization	Add	>
Linkedin	Add	>
Twitter	Add	>
Phone	Add	>
Mobile	Add	>













Below the tables, a disclaimer states: 'Disclaimer: APNIC is collecting this information to help understand those attending our events, and to also improve our products and services to members and the community. We may also use this information to provide better communication to you in the future. Please note that it is not mandatory that you provide this information, and that any disclosure provided by you is optional. For more information, please see our [privacy policy](#).'

Member Account Settings

Account contacts


List of users who have access to this APNIC Member Account. Previously "Contact Mangement".

[Invite New](#)

User ⓘ	Contact Email ⓘ	Role ⓘ	Permissions ⓘ	Remove
 Pedro Penduko	pedro@company.com	Corporate, Technical	Manage	
 James Bond	jb@company.com	Technical, Billing	Manage	
 Oliver Twist It's you	oliver@company.com	Corporate, Technical	Manage	
 Mary Poppins	mary@company.com	Technical	Manage	
 Lisa Simpson	lisa@company.com	Technical	Manage	
 Charlie Brown	charlie@company.com	Technical	Manage	

Pending invitations

People who have been sent invitations to join this Member Account and have not yet accepted.




Name ⓘ	Email ⓘ	Role ⓘ	Actions ⓘ
 Tony Stark	tony@company.com	Corporate, Technical	Resend Cancel Invite

Contacts without APNIC Login

⚠ These contacts should be removed for your security!

You have contacts that do not have secure APNIC Login access. For maximum security, APNIC recommends a login for every user that accesses this member account. To clean up the team directory, we recommend removing these contacts, then ask them to create an APNIC Login and send an invitation to their new APNIC Login.

[Bulk Remove All Contacts without APNIC Login](#)

Name ⓘ	Email ⓘ	Role ⓘ	Remove
 Eric Cartman	eric@company.com	Corporate, Technical	
 Huckleberry Finn	finn@company.com	Technical, Billing	
 Robin Hood	rhood@company.com	Corporate, Technical	
 Frodo Baggins	fbaggins@company.com	Technical	

Current Version

[Add new contact](#)

Showing entries

Full name	Email	Phone	Mobile	Job title	Corporate ?	Billing ?	Technical ?	Edit ?	Delete ?	Permissions ?
John Doe	jd@company.com			Finance Manager		*		Edit	Delete	Permissions
Darth Vader	dv@company.com			CEO			*	Edit	Delete	Permissions
Harry Potter	harry@company.com			Network Engineer			*	Edit	Delete	Permissions
Sherlock Holmes	sherlock@company.com			CTO			*	Edit	Delete	Permissions
Winnie the Pooh	winnie@company.com			Network Engineer	*		*	Edit	Delete	Permissions

Showing 1 to 5 of 16 entries













« [1](#) [2](#) [3](#) [4](#) »

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Showing entries

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Invite New

User	Contact Email	Role	Permissions	Remove
Pedro Penduko	pedro@company.com	Corporate, Technical	Manage	
James B...				
Oliver Tw...				
Mary Po...				
Lisa Simp...				
Charlie B...				

Invite

Enter the email address of the user you'd like to invite and set their role on the account.

Email *

billing@agency.com

Name *

Accountant Macdonald

Add a personal message (optional)

Corporate Contact

Full permissions, responsible for managing everything in the Member Account.

☐

Technical Contact

Responsible for technical tasks and resource management.

☐

Billing Contact

Manages invoices for membership renewal fees and billing history.

☒

Show Advanced MyAPNIC Permissions

Cancel

Send

Pending in...

People who have b...

Name

Tony Sta...

Contacts v...

These cont...

You have c...

accesses th...

APNIC Logi...

Bulk Rem...

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Showing 5 entries

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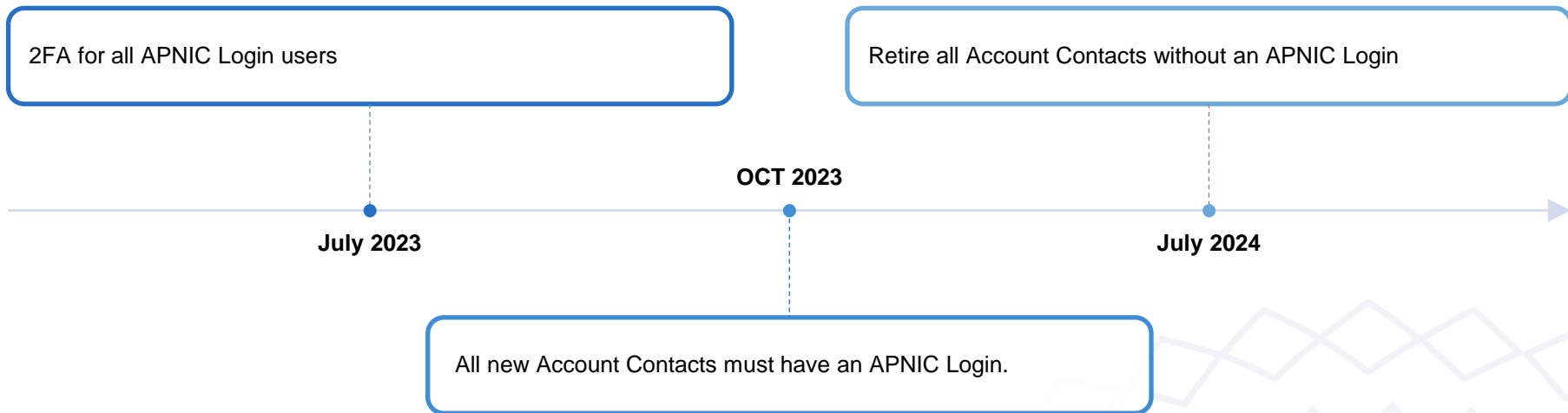
Showing 1 to 5 of 16 entries

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Benefits Members

- **Easier to understand** and manage Account Contacts in MyAPNIC.
- **Improved Authentication and Identification:** All authorized activity can be assigned to a unique APNIC Login ID improving auditing, accountability.
- **2FA** and email verification means Individual account contacts are more active participants and accountable for their own security.

Implementation Timelines



Communication & Support

- 1 year transition period
- Ongoing communication and support through the transition period
- Self-service tools in MyAPNIC to retire old contacts easily.
- Listen and adapt to feedback.

Orbit

- Launched as an MVP at APNIC 54
- Supporting and enabling community discussion
 - In leadup to APNIC 55 we saw how important community discussion is
- Target 650 new registered users over a year
 - On track over 100 new a month
- Achieve at least 1,500 new posts over a year
 - On track over 300 new a month
- Community Building (Siena Perry)
- Continuous improvement

#apricot2023

The screenshot shows the Orbit web application interface. At the top, there's a black header with the 'APNIC' logo on the left and a user profile icon on the right. Below the header, the main navigation bar includes 'Orbit' and 'News Feed'. A dark sidebar on the left contains a menu with options: 'News Feed', 'My Profile', 'All Mailing Lists', 'My Subscriptions' (with an upward arrow), and 'Settings' (with a wrench icon). Under 'My Subscriptions', several mailing lists are listed: 'APNIC User Feedback Group', 'APNIC-Services', 'Apnic-announce', 'Community Elections Reforms', 'Community Test', 'Mailman-test', 'Orbit-discuss', 'bgp-stats', 'sig-policy', and 'Settings'. The main content area is titled 'Welcome to ORBIT' and features a banner with colorful stylized human icons. Below the banner, a paragraph explains that Orbit is a place for the APNIC community to connect, discuss, and share information related to Internet addressing and networking, noting it's an evolution of mailing lists and that the 'Code of Conduct' applies. To the right of this text is a 'View:' button with a grid icon and a hamburger menu icon. The feed displays three posts. The first post is from 'apnic-talk' with the title '[apnic-talk] BoF today: Internet exchange points (IXP) Neutrality' by Katsuyasu Toyama, dated 14 Sep 2022 12:45 am, with 1 like and 0 comments. The second post is from 'Measurement and research in Asia Pacific' with the title '[Measurement] Interactive honeypots used to effectively measure and discover groupings of network attackers' by Dan Fidler, dated 13 Sep 2022 11:52 pm, with 1 like and 0 comments. The third post is from 'sig-policy' with the title '[sig-policy] prop-147-v001: Historical Resources Management' by an author whose name is partially obscured, dated 13 Sep 2022 8:11 pm, with 11 likes and 44 comments.

[Back to News Feed](#)

community-test

 [Community-test] Hyperkitty renderer test 27 Mar 2022 11:51 p.m.
by Lily Che

This is some bold text

This is some italicized text

This is some underlined text

This is some strikethrough text

I am a super^{script} and I am a sub_{script}

Here is a [link](#)

This is a code snippet:

```

1 // Imports
2 import mongoose, { Schema } from 'untitled'
3
4 // Collection name
5 export const collection = 'Design'
6
7 // Schema
8 const schema = new Schema({
9   name: {
10     type: String,
11     required: true
12   },
13
14   description: {
15     type: String
16   },
17   (timestamps: true))
18
19 // Model
20 export default mongoose.model(collection, schema,
21 collection)

```

Bulleted List:

- Item A
- Item B
- Item C
 - Nested once
 - Nested twice
 - Nested thrice

Numbered List:

- Item 1
- Item 2
- Item 3
 - Nested once
 - Nested twice
 - Nested thrice

Here's a picture:



Editor improvements

APNIC

Orbit << apnic-Academy

News Feed

My Profile

All Mailing Lists

My Subscriptions

APNIC Talk

APAC-ICT-Women

APNIC-announce

APNIC-Services

[apnic-Academy](#)

apnic-transfers

apops

bgp-stats-all

bgp-stats

btnog

Community Elections Reforms

APNG Community








Create a new thread

Subject

Fancy editor

Message

[Inline Code](#)

B I U        Switch to Markdown

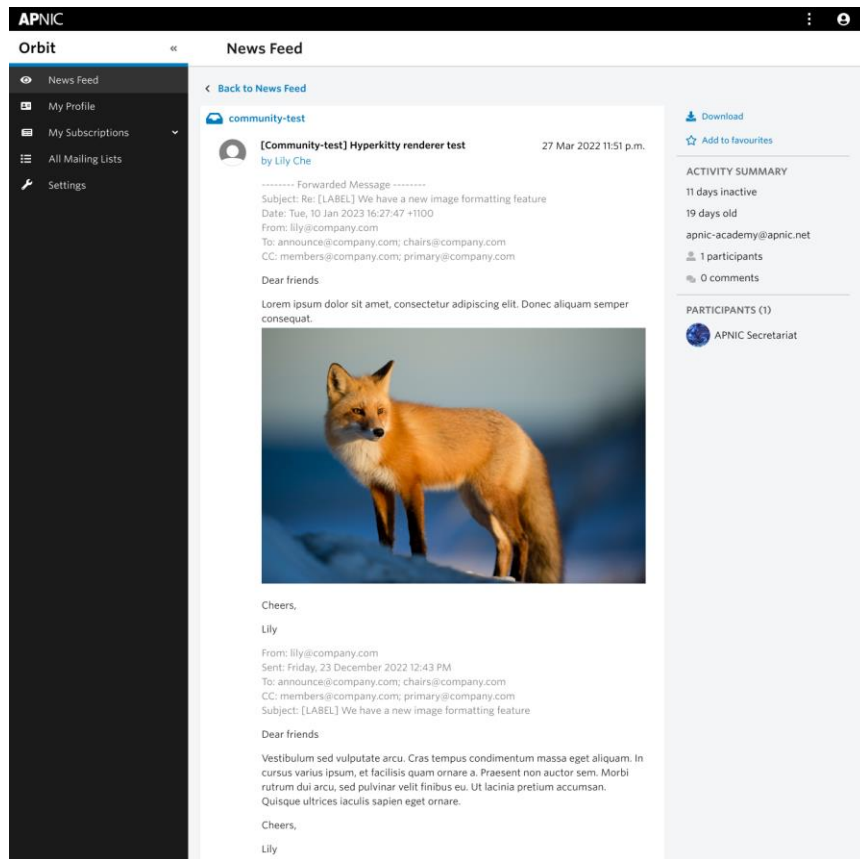
This message will be sent as: lily.che@apnic.net [Link another address](#)

If you aren't a current list member, sending this message will subscribe you.

Send Cancel

Orbit

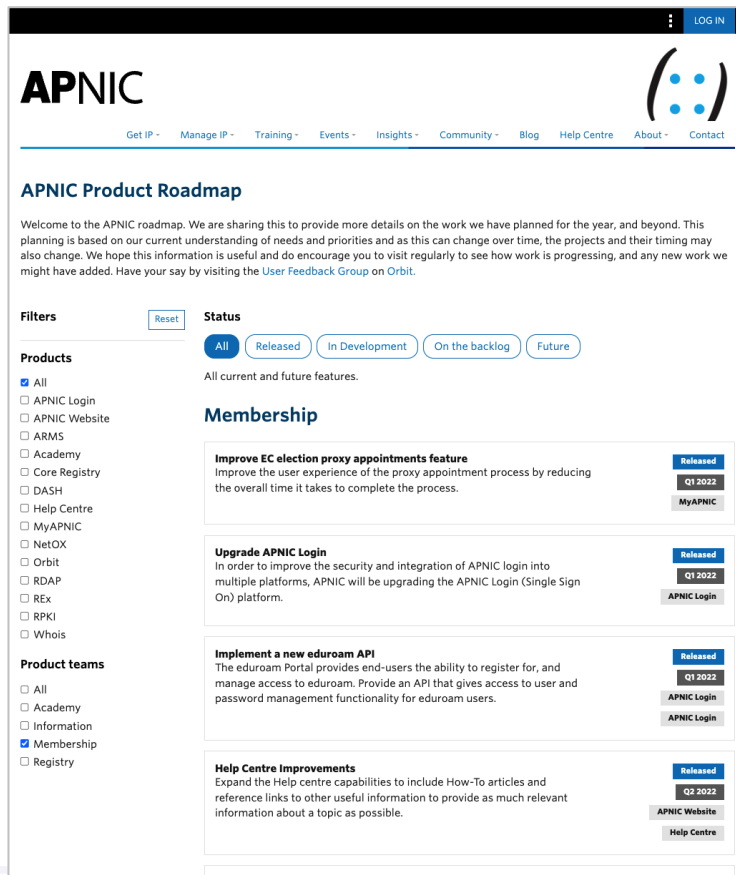
- Embedded images
- Performance improvements



Roadmap

- Product Roadmap

— <https://roadmap.apnic.net>



The screenshot shows the APNIC Product Roadmap page. At the top is the APNIC logo and a navigation bar with links: Get IP, Manage IP, Training, Events, Insights, Community, Blog, Help Centre, About, and Contact. The main heading is "APNIC Product Roadmap". Below it is a welcome message and a link to the User Feedback Group. The page is divided into sections: Filters, Products, and Product teams. The Products section lists various APNIC services with checkboxes. The Product teams section lists teams with checkboxes. The right side of the page shows the status of various products, including "Improve EC election proxy appointments feature", "Upgrade APNIC Login", "Implement a new eduroam API", and "Help Centre Improvements". Each item has a "Released" status and a timeline bar indicating the release period.

APNIC

Get IP - Manage IP - Training - Events - Insights - Community - Blog - Help Centre - About - Contact

APNIC Product Roadmap

Welcome to the APNIC roadmap. We are sharing this to provide more details on the work we have planned for the year, and beyond. This planning is based on our current understanding of needs and priorities and as this can change over time, the projects and their timing may also change. We hope this information is useful and do encourage you to visit regularly to see how work is progressing, and any new work we might have added. Have your say by visiting the [User Feedback Group](#) on Orbit.

Filters [Reset](#)

Products

- ☒ All
- ☐ APNIC Login
- ☐ APNIC Website
- ☐ ARMS
- ☐ Academy
- ☐ Core Registry
- ☐ DASH
- ☐ Help Centre
- ☐ MyAPNIC
- ☐ NetOX
- ☐ Orbit
- ☐ RDAP
- ☐ REX
- ☐ RPKI
- ☐ Whois

Product teams

- ☐ All
- ☐ Academy
- ☐ Information
- ☒ Membership
- ☐ Registry

Status

[All](#) [Released](#) [In Development](#) [On the backlog](#) [Future](#)

All current and future features.

Membership

Improve EC election proxy appointments feature

Improve the user experience of the proxy appointment process by reducing the overall time it takes to complete the process.

Released
Q1 2022
MyAPNIC

Upgrade APNIC Login

In order to improve the security and integration of APNIC login into multiple platforms, APNIC will be upgrading the APNIC Login (Single Sign On) platform.

Released
Q1 2022
APNIC Login

Implement a new eduroam API

The eduroam Portal provides end-users the ability to register for, and manage access to eduroam. Provide an API that gives access to user and password management functionality for eduroam users.

Released
Q1 2022
APNIC Login
APNIC Login

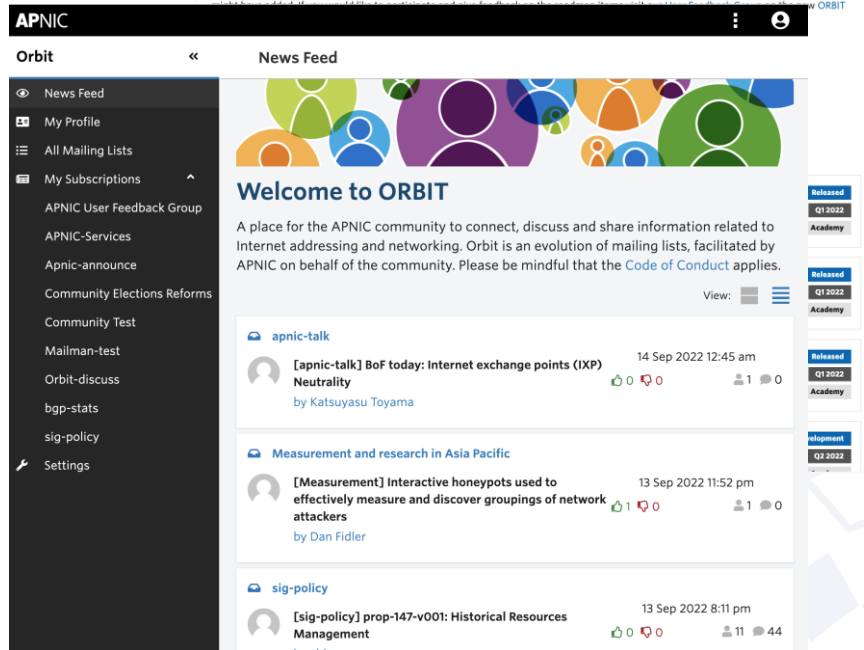
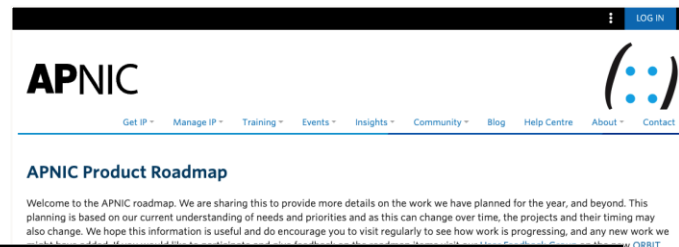
Help Centre Improvements

Expand the Help centre capabilities to include How-To articles and reference links to other useful information to provide as much relevant information about a topic as possible.

Released
Q2 2022
APNIC Website
Help Centre

Thank you

- <https://ROADMAP.apnic.net>
- <https://ORBIT.apnic.net>



State of RPKI and IPv6 deployment in Asia Pacific

Anna Mulingbayan



Resource Public Key Infrastructure (RPKI)

What is RPKI?

- Robust security framework for verifying the association between resource holders and their Internet resources
- Can help:
 - Prevent **route hijacks/mis-origination/misconfiguration**

ROA (Route Origin Authorization)

- **Digitally signed object** that provides a means of **verifying** that an **IP address block custodian** has **authorized** an **Autonomous System (AS)** to originate routes to one or more **prefixes** within the address block
- With a **ROA**, the **resource holder** is **attesting** that the **origin AS** number is **authorized to announce the prefix(es)**
 - The attestation can be verified cryptographically using RPKI



MyAPNIC

MyAPNIC

Member Account Settings ▾ Events Voting Tools ▾ Tickets & Requests ▾ Resource Manager ▾

Welcome To MyAPNIC Dashboard, Anna Mulingbayan!

If you have an **existing** membership with APNIC, make sure you link the membership account with this APNIC Login you have!

Dismiss [Link it now](#)

Authentication

Change password →

Two-factor Auth (TOTP) →

Account management

IRT emails and validation →

Organization details →

Account contacts →

Service Announcements

Service Announcement: 17 November 2022

Service Announcement: 2 November 2022

Service Announcement: 6 October 2022

Resource Management

Whois updates →

IPv4 utilization →

Route management →

Reverse DNS delegations →

Upcoming events

APNIC - Internet Routing Works...
Confirmed
21 - 23 November 2022

Register

News highlight

APRICOT 2023
APNIC 55
20 February - 3 March 2023

If you want to share your Internet operations experience, [submit](#) a paper for APRICOT 2023.

Call for papers open

Todo

Pending access requests

There are requests from users to access your member account, waiting for your approval.

Process Them

Billing

Membership expiry date:
31 Jan 2038

Renewal invoice date:
01 Feb 2038

Make a payment View Billing History

Transfers & Returns

Transfer resources into another account →

Receive resources into my account →


Request transfer pre-approval →

Return IPv4 Resources →

IPv4 Transfer Listing Service →

MyAPNIC is a secure online portal for APNIC account holders to manage Internet number resources, update contact information, use RPKI and so forth

APRICOT 2023
APNIC 55



#apricot20__

RPKI deployment

1. Create ROAs



2. Implement Route Origin Validation (ROV)

3. Drop invalids

- Log-in to <https://myapnic.net>
- Click Resource Manager>RPKI to check if RPKI engine is enabled
- Go to Route Management to create/manage ROAs

Home / Resources / RPKI

RPKI

Enable Resource Certification

Currently, you have not enabled resource certification for your registry.

☐ I want to operate in the MyAPNIC RPKI portal.

☒ I want to host my own certification authority and run an RPKI engine myself.

Next

Routes

Requests

Routes

Register your routes in MyAPNIC using the tool below. It will automatically create route objects in the APNIC Whois Database with any AS number you have authorized. RPKI ROAs will also be created at the same time. If the IGA option is enabled (changes to RPKI may take around ten minutes to propagate to the IGA) status will not be updated until then.

[Add new](#) [Delete selected](#)

Show 10 entries Search:

C	Prefix	Origin AS	ROA status	Whois status	Actions
	203.176.189.0/24	AS88888	ENABLED	ENABLED	Edit Delete
	203.176.189.144/28	AS10221	ENABLED	ENABLED	Edit Delete
	203.176.189.160/27	AS10221	ENABLED	ENABLED	Edit Delete
	203.176.189.192/26	AS10221	ENABLED	ENABLED	Edit Delete

Showing 1 to 4 of 4 entries

Previous Next



RPKI deployment

1. Create ROAs

2. Implement Route Origin Validation (ROV)



- More networks are now doing ROV, so it is important to create and keep ROAs up-to-date

3. Drop invalids

RPKI deployment

1. Create ROAs

2. Implement Route Origin
Validation (ROV)

3. Drop invalids



- This webpage maintained by Cloudflare has details of networks that have deployed RPKI ROV:

<https://isbgpsafeyet.com>

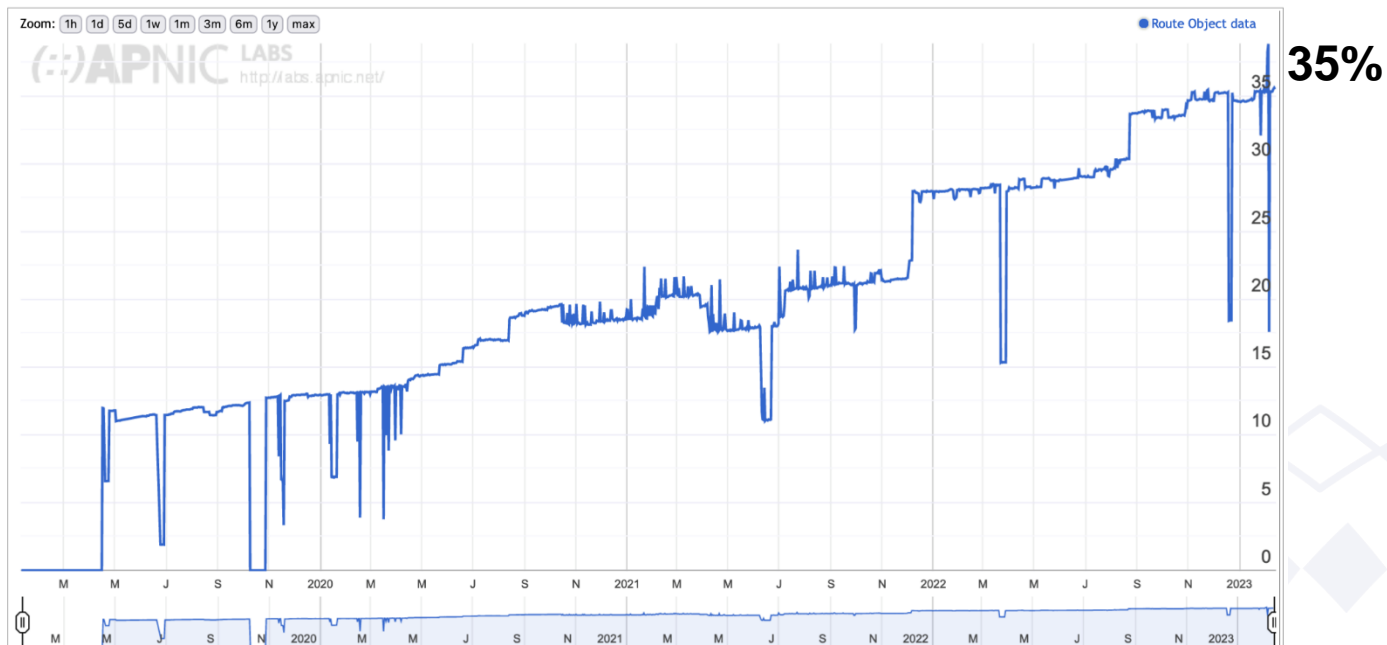
Resource Certification

- Contact permissions required for Resource Certification
- Must have Two-Factor Authentication enabled to use Resource Certification feature in MyAPNIC
 - Corporate and Technical Contacts by default have 'update' privilege

ROA coverage – Asia

Use of Route Object Validation for Asia (XD)

Display: **Addresses** (Advertised ROA-Valid Advertised Addresses), **Total** (IPv4 + IPv6), **Percent** (of Total)



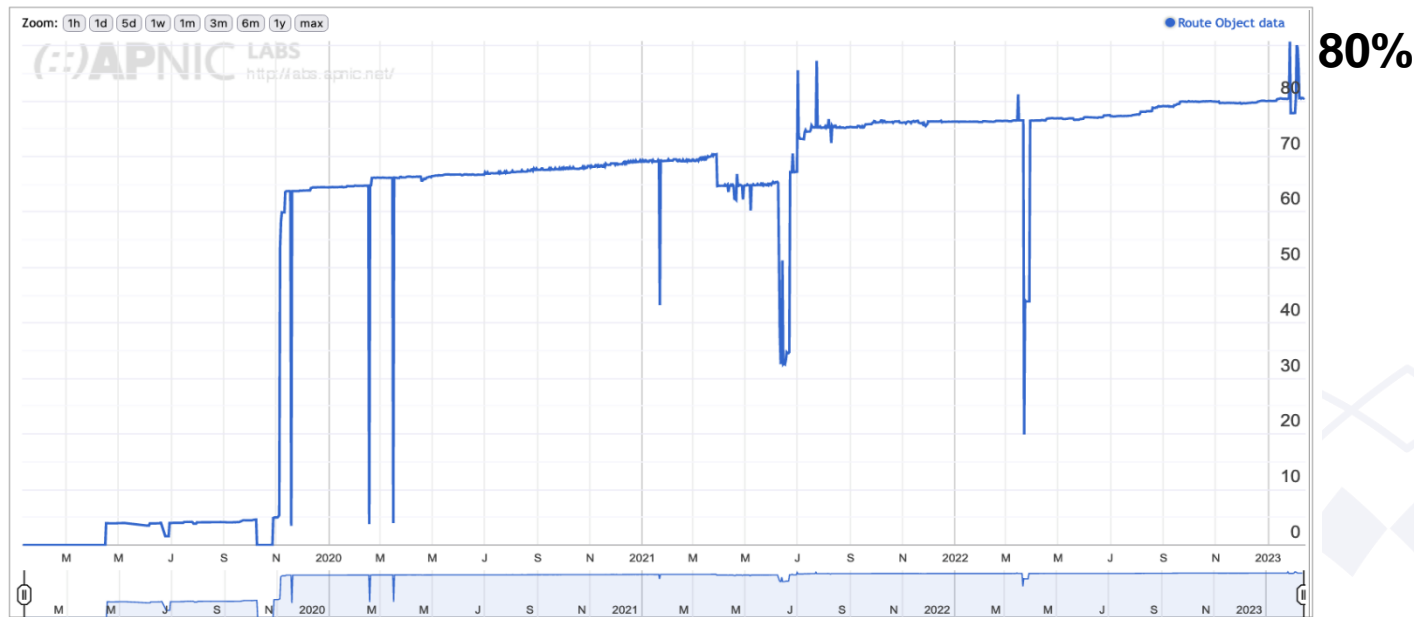
Source: <https://stats.labs.apnic.net/roa/XD>



ROA coverage - Oceania

Use of Route Object Validation for Oceania (XF)

Display: Addresses (Advertised ROA-Valid Advertised Addresses), Total (IPv4 + IPv6), Percent (of Total)



Source: <https://stats.labs.apnic.net/roa/XF>

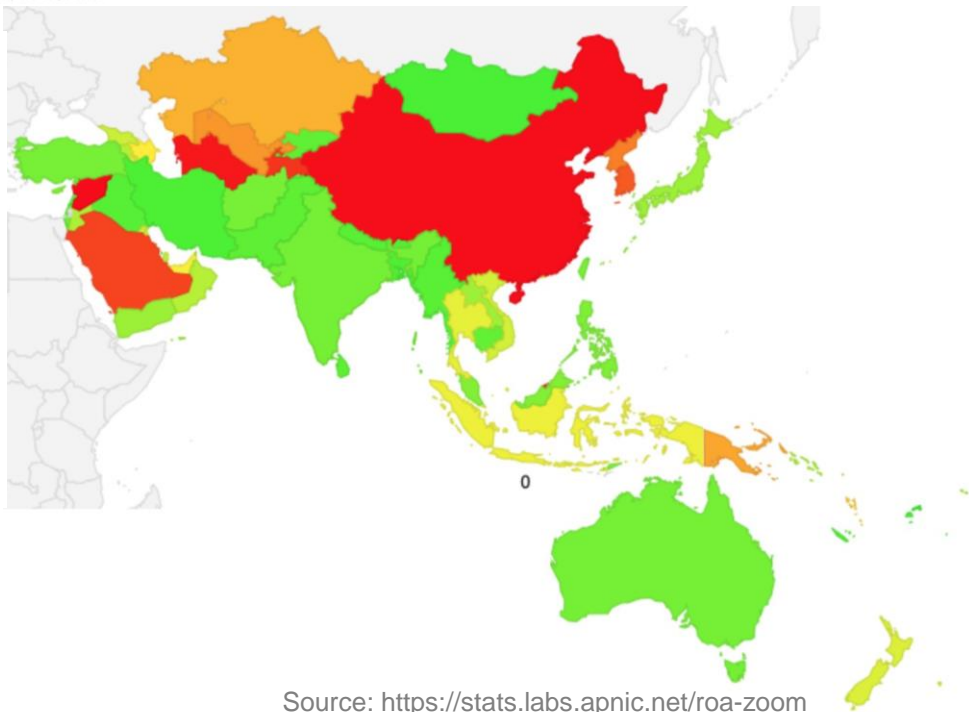
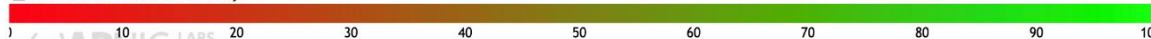


ROA Asia Pacific coverage

ROA data by Country (%)

[Click here for the classic map](#)

☐ Remember current choice for 7 days



- 60% of respondents from 2022 APNIC Survey indicated their organization had not deployed RPKI
- 38% said they did not have the knowledge and expertise to deploy it
- Registry requires continued investment to meet the architecture, availability, and robustness requirements of RPKI

IPv6

#apricot2023

IPv6 uptake in the AP region

- Across a 5-year period, the world has moved from 18% to 38% IPv6 capability[‡] and most of the deployment was in the Asia Pacific
- APNIC rankings have moved ahead of the world across sub-regions as we've had significant shift in intensity inside many economies
- You COULD use IPv6, you're capable of using it, alongside saying if you actually do use it

IPv4 vs IPv6

- IPv6 is becoming less of a challenge (from 34% in 2020 down to 26% in 2022)
- Support for transition is still needed as IPv4 scarcity increases
 - The top IPv4 availability challenges were cost (30%)
 - Finding IPv4 addresses in the market (27%)

Deployment pace varies

- India continued its remarkable deployment with significant increase
 - Reliance/Jio approached its peak in 2018 and has been slowly pushing to the limit
- Viet Nam saw a rise but slowed down between 2021-2022
 - FPT was decisive in pilot deployment of IPv6 at scale in Viet Nam
 - After 2018, Viettel, VNPT, and Mobifone all made significant deployments, which continue
- Australia and China had reasonably steady but slow growth across the period
- Thailand, Viet Nam, Myanmar, Malaysia, Philippines, and Australia all increased ranking and contribution

State of the world

CC	%	CC	%	CC	%	CC	%	CC	%	CC	%	CC	%	CC	%	CC	%	CC	%
BL	77.97%	IN	75.90%	BE	69.30%	FR	66.39%	SA	64.54%	DE	62.55%	GR	60.96%	UY	60.40%	IL	57.46%	MY	57.17%
MS	54.45%	US	54.10%	PR	54.08%	AX	49.52%	MX	48.67%	NL	48.53%	FI	48.30%	VN	47.98%	GB	47.46%	TW	47.14%
HU	46.95%	BR	45.85%	LK	44.83%	JP	44.83%	LU	44.71%	AE	44.01%	CH	41.82%	PT	41.37%	CA	40.59%	MM	39.42%
TH	39.14%	GT	38.15%																

World Average is 38%

CC	%	CC	%	CC	%	CC	%	CC	%	CC	%	CC	%	CC	%	CC	%	CC	%
EE	37.04%	AU	35.68%	NP	34.01%	PY	33.15%	AT	32.59%	RO	32.39%	NO	31.92%	PE	31.02%	MO	29.39%	CN	28.87%
SX	28.29%	CO	27.86%	MF	27.44%	SR	26.84%	TT	25.98%	EC	25.37%	IE	25.22%	GA	24.14%	NZ	23.75%	TG	23.66%
BT	22.16%	AR	22.06%	LI	21.82%	CZ	21.31%	KW	19.86%	BO	18.63%	CG	18.61%	CL	18.23%	NI	17.41%	JO	17.29%
PL	17.18%	BM	16.65%	GY	16.56%	OM	16.31%	KR	16.10%	LV	16.01%	SI	15.67%	GE	15.60%	SG	14.36%	BY	14.34%
IS	13.62%	SE	13.24%	PH	12.73%	JM	12.59%	LC	12.44%	MD	12.42%	RW	12.41%	ID	10.96%	ZW	10.48%	KZ	10.30%
SK	10.10%	VG	9.60%	BG	9.59%	BA	9.50%	DK	9.08%	UA	9.05%	SV	8.76%	RE	8.74%	PF	8.68%	VC	8.47%
RS	7.71%	IT	7.61%	AL	7.19%	KE	7.03%	RU	6.66%	BD	6.03%	HR	5.91%	BF	5.89%	BZ	5.81%	HN	5.29%
GD	5.20%	ES	5.00%	CR	4.91%	ZA	4.70%	MN	4.70%	GP	4.53%	PK	4.46%	HK	3.98%	AM	3.97%	DO	3.94%
EG	3.80%	VI	2.66%	TR	2.56%	PA	2.10%	PG	1.92%	NC	1.88%	CD	1.70%	CI	1.68%	SC	1.48%	LB	1.19%
VE	1.18%	CW	1.18%	MQ	0.97%	TO	0.92%	ML	0.83%	MC	0.71%	IR	0.61%	JE	0.54%	GF	0.51%	TZ	0.49%

Asia Pacific punches above its weight!

- From 56 APNIC economies, in 2018 four were above average, seven average and two below average:
 - 23% of the region's economies had visible IPv6 capability above 1%
- In 2022, eight economies are above average, eight average and nine significantly below average, for a total of 25 from 56.
 - 44% of the region's economies are now visible in IPv6 capability (above 1%)

Information Products update

Rafael Lourenco

DASH – Updates

- Suspicious Traffic alerts released on Q1 2022 supporting email notifications.
- Routing status feature released on Q2 2022.
- Routing Status alerts (beta) released on Q3 2022 supporting email, SMS and Slack.
- Suspicious Traffic alerts support for SMS and Slack to be released in March 2023.
- Routing Status alerts to go out of beta in March 2023.

DASH – Routing Status

- A dashboards for members to visualise the routing status of their networks and identify inconsistencies among three systems: BGP, RPKI and IRR.

APNIC

Member Account: TEST-AU | Showing routes for: AS64496 | TEST-AU

Routing status

Review the routing information of your network to prevent misconfigurations and detect BGP hijacks.

About this page ▾

Legend ▾

Overview of inconsistencies

Total inconsistencies found: 82

Status of ROAs and route objects as seen in BGP:

- ROA mismatches: 2 [View prefixes ▾](#)
- Route object mismatches: 80 [View prefixes ▾](#)

Routing status for AS64496

*Indicate prefixes I am NOT the holder of

Show: 20 entries ▾

Search by prefix or ASN:

Filter by: ☐ ROA issues ☐ Route object issues ☐ Only AS64496

Prefix ▾	BGP Route ▾	Origin AS ▾	ROA ▾	Route Object ▾
198.51.100.0/24	198.51.100.0/24	AS64496	Published	Published
10.0.0.0/8	10.0.0.0/8	AS64496	Not Published	Mismatch info
192.0.2.0/24 Aggregation ▾	192.0.2.0/24	AS64496	Published	Published

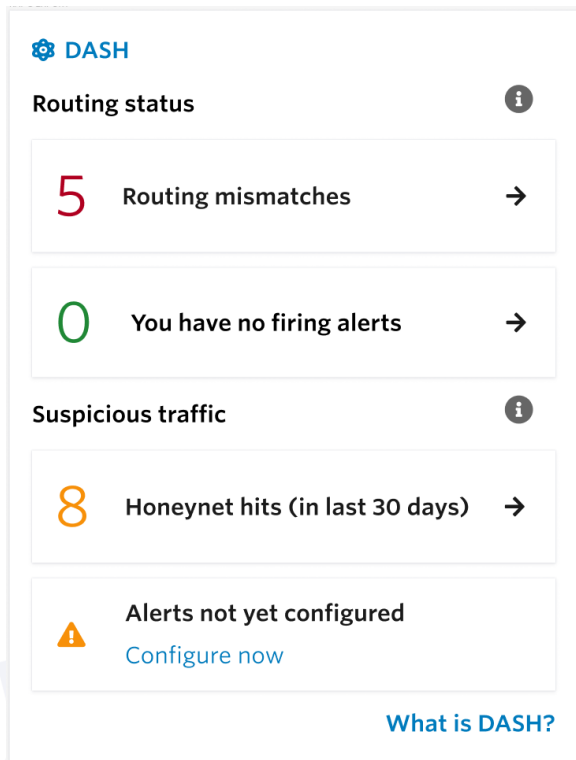
DASH – Routing Status Alerts

- Receive alerts for:
 - Routing inconsistencies (BGP, RPKI, IRR)
 - Missing ROAs or route objects
 - Unexpected or missing BGP announcements
- Supported channels:
 - Email
 - SMS
 - Slack

The screenshot shows the APNIC DASH (Data Abuse Status Handling) interface for Routing Status Alerts. The left sidebar contains navigation links: Routing Status (selected), Dashboard, Alerts BETA, Suspicious Traffic, What to do, and Latest security news. Below these are Useful Links: About, Data Source, and Disclaimer. The main content area is titled 'Routing Status Alerts BETA' and includes a 'Member Account' dropdown set to 'APNICRANDNET-AU'. The 'Overview' section shows 'Firing alerts' as 0 and 'Last firing alert (last 7 days)' as 'No firing alert in the last 7 days.' The 'Your alerts' section features a search bar and a 'New Alert' button. Below is a table with columns for Alert name, Status, and Timestamp (last trigger). The table contains one entry: 'Mismatches for my prefixes' with a status of 'Clean' and a timestamp of '-'. A 'Feedback' button is visible on the right side of the interface.

Alert name	Status	Timestamp (last trigger)
Mismatches for my prefixes	Clean	-

DASH – MyAPNIC Widget



The screenshot shows the DASH MyAPNIC Widget interface. At the top, there is a header with a gear icon and the text "DASH". Below this, the "Routing status" section is displayed, featuring a red "5" and the text "Routing mismatches" with a right-pointing arrow. Below that, a green "0" is shown with the text "You have no firing alerts" and a right-pointing arrow. The "Suspicious traffic" section follows, showing an orange "8" and the text "Honeynet hits (in last 30 days)" with a right-pointing arrow. At the bottom of this section, there is a warning icon and the text "Alerts not yet configured" with a link "Configure now". A blue link "What is DASH?" is located at the bottom right of the widget.

DASH

Routing status ⓘ

5 Routing mismatches →

0 You have no firing alerts →

Suspicious traffic ⓘ

8 Honeynet hits (in last 30 days) →

⚠ Alerts not yet configured
[Configure now](#)

[What is DASH?](#)

- Allows members logging into MyAPNIC to be informed on routing inconsistencies and suspicious traffic.
- Planned release: Q3 2023

APNIC

MyAPNIC

Member Account Settings ▾ Events Voting Tools ▾ Tickets & Requests ▾ Resource Manager ▾

Welcome to MyAPNIC Dashboard, Name!

Member Account: MYAPNIC-TEST-CD ▾

If you have an **existing membership** with APNIC, make sure you link the membership account with this APNIC Login you have!

[Dismiss](#) [Link it now](#)

Authentication

Change password →

Two-factor Auth (TOTP) →

Account management

Organization details →

Account contacts →

Service announcements

Service Announcement: 08 December 2021

Service Announcement: 02 December 2021

Service Announcement: 01 December 2021

Service Announcement 24 November 2021

Service Announcement: 11 November 2021

[View all](#)

Resource management

Whois updates →

IPv4 utilization →

Route management →

Reverse DNS delegations →

Incident Response Team (IRT) →

DASH

Routing status ⓘ

5 Routing mismatches →

0 You have no firing alerts →


Suspicious traffic ⓘ

8 Hits within current period →

Alerts not yet configured
[Configure now](#)

[What is DASH?](#)

Upcoming events

 **APNIC 52 Conference**
Online
8 - 16 September 2021
[More info](#)

[Register](#)

Todo

Pending registrations

There are pending user registrations for this account.
[Process now](#)

Invalid maintainer password.

One or more of your maintainers has an invalid password.
[Update now](#)

Billing

Membership expiry date: 31 Jan 2022 ⓘ

Renewal invoice date: 01 Feb 2022

[Make a payment](#) [View Billing History](#)

Transfers & Returns

Transfer resources into another account →

Receive resources into my account →


Request transfer pre-approval →

Return IPv4 Resources →

IPv4 Transfer Listing Service →

DASH Widget in the MyAPNIC Dashboard (draft subject to review)

#apricot2023

APRICOT 2023
APNIC 55 

DASH - Expanding alert channels

- Community feedback received during APNIC 54.
- New channels to be supported:
 - WhatsApp
 - Webhooks
- Planned release: Q3 2023

"Global" REx (Resource Explorer)

- REx is being expanded to provide global data:
 - INR delegation statistics
 - IPv6 deployment
 - Holder information for INRs
 - Visualisation of AS interconnections
- RIR filters: limit data scope per registry
- Re-architecture to allow collaboration with other registries
 - Data from public sources: delegated stats files, RDAP, APNIC Labs
- Planned release: Q2 2023

Registry Products Update

Tom Harrison

Registry Products Update

Route Management
Prevalidation



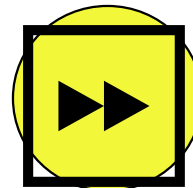
ASN Delegation
Identity

Alternative Whois
Authorization



RPKI Signed Checklists
(RSCs)

Registry API



Route Management Prevalidation

- Validate changes submitted via route management to ensure that they won't cause problems in BGP
- Allows users to override if necessary
- Available in production

Pending Queue

BGP validation warning: If the requested changes are made, the following BGP announcements will become "not found" or/and "invalid". Are you sure you want to commit these changes?

BGP Prefix	BGP Origin AS	Current RPKI Status	New RPKI Status
116.193.188.0/24	AS63515	VALID	INVALID

Previous

1

Next

Back

Yes, commit changes



ASN Delegation Identity

```
aut-num:          AS64496
as-name:          CUSTOMER-AS
descr:            Customer Co
country:          SG
org:              ORG-CUSTOMER1-AP
sponsoring-org: ORG-PROVIDER1-AP
admin-c:          CUST1-AP
tech-c:           CUST1-AP
abuse-c:          CUST1-AP
mnt-by:           APNIC-HM
mnt-irt:          IRT-CUSTOMER-AP
last-modified:    ...
source:           APNIC
```

- Previously: member applies for ASN on behalf of customer, aut-num record in Whois has member's details
- After release: aut-num record has customer's details
- Scheduled for release by the end of Q1

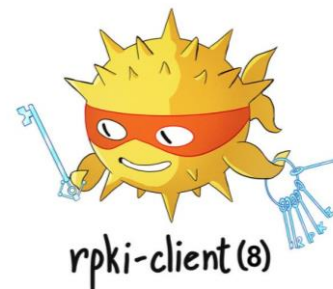
Alternative Whois Authorisation Model

- Deprecating password use in updates in favour of OAuth tokens
- Transparent to users, except for those carrying out updates via mail
- Scheduled for release by the end of Q1

Passwords will still be supported while we contact users and transition them to tokens

RPKI RSCs

- RPKI Signed Checklist
- Sign arbitrary files/documents using RPKI
- Specification now final:
 - <https://datatracker.ietf.org/doc/rfc9323/>
- Several implementations
- Scheduled to begin work in Q2



Registry API

- Support for various registry operations:
 - Whois updates
 - RDNS updates
 - Route management
- Testbed deployed in Q1 of last year
- Scheduled to begin work in Q3

Training & Development Updates

Che-Hoo Cheng

Infrastructure & Development Director

APNIC

#apricot2023



Key findings from APNIC survey

- Training is highly valued by community
- Topics of high interest:
 - Security
 - IXP/Peering

Key findings from APNIC survey

Lack of skilled Internet engineers and Internet security are the biggest challenges

In a shift from 2020, a lack of suitably skilled technical employees is the most concerning strategic challenge for organization executives. This is also evident from the 2022 Interviews, and frequently mentioned among verbatim comments in the survey.

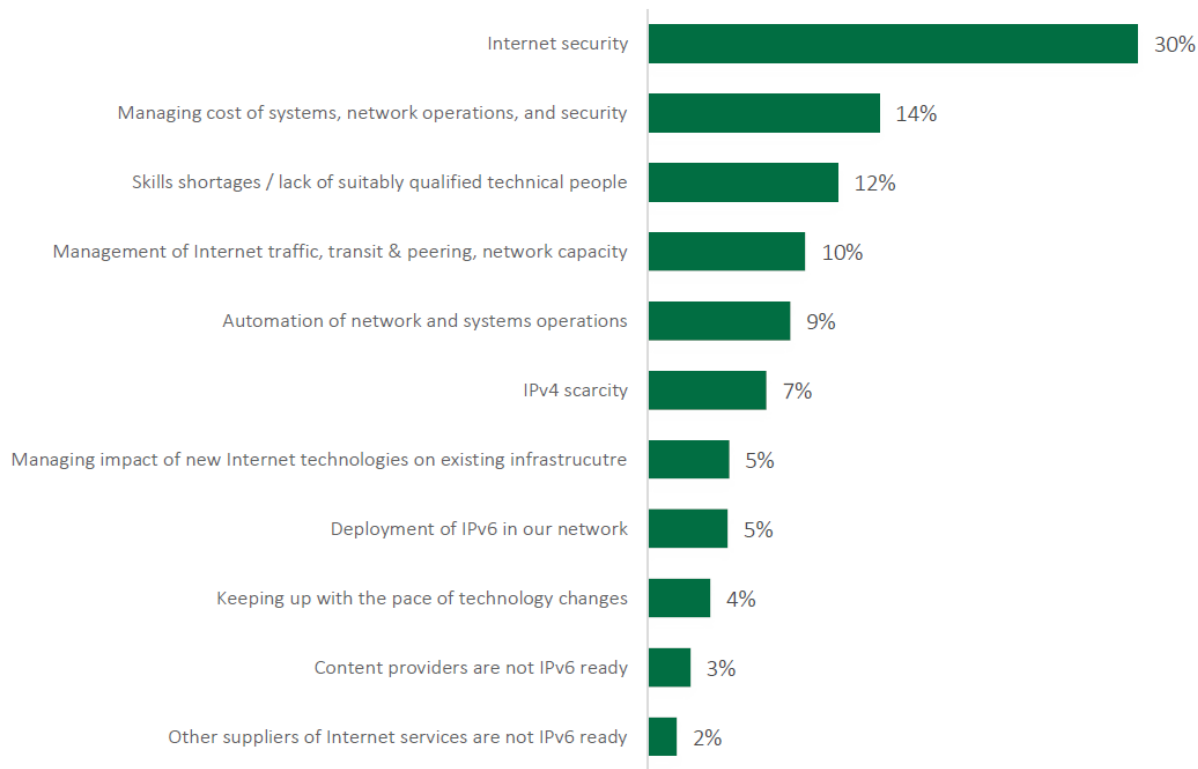
Internet security is also an issue for both executives and operational staff, with concerns heightened by the proliferation of Internet use as a result of COVID-19.

Increased security-focused training courses, collaboration with others, and maintaining a security threat intelligence sharing service are the best ways APNIC can assist.

Training remains the most valuable way APNIC can assist with the challenges, with particular emphasis on DDoS prevention and security policy development favoured by respondents. Maintaining a security threat intelligence service, and collaboration with other technical security organizations are other activities the community believe APNIC can consider to assist them.

Thinking about your Internet-related services, products or activities, what are the MAIN operational challenges facing your organization?

(Ranking Question. All Respondents asked to rank at least top 3 items, n=1,300) (% Ranked 1)



Thinking about your Internet-related services, products or activities, what are the MAIN STRATEGIC challenges facing your organization?

(Ranking Question. Respondents holding executive roles asked to rank at least top 3 items, n=291) (% Ranked 1)



APNIC Academy

- [APNIC Academy](#) as the branding to use for all APNIC training and technical assistance (TA) activities gradually starting 2020
- Blending Learning / Flipped Classroom / HyFlex
 - Face-to-Face + Online / Instructor-Led + Self-Paced
 - As complement, with good balance
 - Theories and practical exercises
 - Basic to advanced level
 - Depth and breadth
- Offering full certification with full curriculum as long-term goal

Work In Progress



Training Events – Instructor-led Training

- Returning to Face-to-Face training gradually
- Hybrid training is also an option to consider
 - No international travel is involved for trainers
- Nominal fee is charged for in-person/hybrid APNIC-organised training
 - Members receive discount
- APNIC-sponsored training with NOGs and other partners
- Online instructor-led training (free-of-charge) is still arranged to cover more audience
- More focused support for higher impacts with subregional teams
- Much more training & TA activities, with staff trainers and Community Trainers
- Named as “APNIC Academy Training”

Community Trainers

- Help scale up our training & technical assistance work
- Retained CT trial was successful in 2022 with up to 5 RCTs
 - More focused training with RCTs in relevant economies
- More economies to cover in 2023
- 12+ RCTs and 30+ VCTs as targets
- If you are interested or have referrals:
 - <https://www.apnic.net/about-apnic/employment/>

Security Training & Development

- Training:
 - Network/Routing Security
 - DNS Security
 - Information/Cyber Security
- CERT/CSIRT development
- Community Honeynet & Security Threat Sharing Platform
 - Feeding data to DASH
 - Increase the number of honeypot sensors
 - Increase the Community Honeynet and Security Threat Sharing Platform partners
 - Develop and attend threat sharing community events

IXP/Peering Support & Development

- Training & Technical Assistance
- Package/bundle for IXP Development
 - IXP Manager
 - ROV with Route Server
 - M-Root and/or other root servers
 - RIPE Atlas Anchor
- MOU with APIX/ISOC/APNIC Foundation for equipment support
- Sponsorship for IXP Manager, PeeringDB & IXP-DB
- Support of APIX/Peering Asia/Peering Forums (along with NOGs or not)

Academy Product Updates

- DONE: Past Events added (as part of Training Wiki migration)
- 2023 Plan:
 - Training Wiki migration
 - Improve Academy data reporting with BI tools
 - Integrate TA platform with Salesforce case management tools
 - Design training certification program
 - More training content
- Roadmap: <https://roadmap.apnic.net>

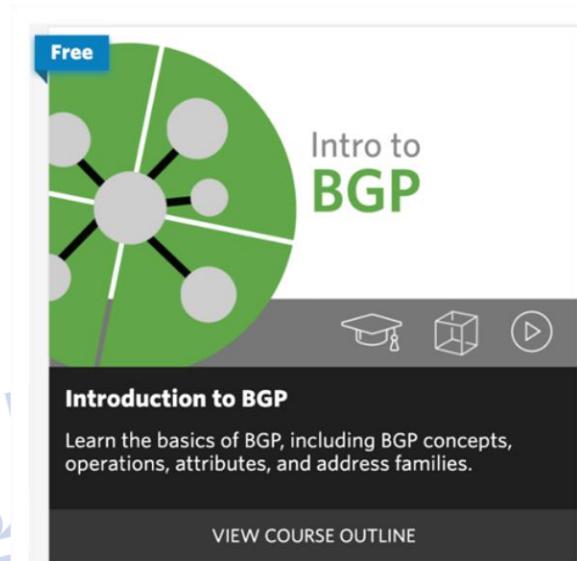
New Virtual Labs in 2022

- 12 new Virtual Labs:
 - DHCPv6-PD
 - RPKI Lab with RPKI-Prover
 - RPKI Lab with FORT
 - Practical Packet Analysis
 - IPv6 Security
 - MPLS LDP and SR
 - NMM SNMP, LibreNMS & RRD
 - Log Management and Flow Monitoring
 - BGP Link State
 - Security Monitoring and Analysis
 - IPv4/IPv6 Dual-Stack
 - SRv6



Launch of two new self-paced courses

- Published 2 new courses “Introduction to BGP” and “Cybersecurity Fundamentals”:



References

- APNIC Training Services - Strategies & Directions of APNIC Academy at APNIC 52:
<https://conference.apnic.net/52/assets/files/APBS588/apnic-training-services-strategies-and-directions-of-apnic-academy.pdf>
- Training & Development Updates at APNIC 53:
<https://2022.apricot.net/assets/files/APNT374/training-and-development-updates.pdf>
- Training & Development Updates at APNIC 54:
https://conference.apnic.net/54/assets/files/APSG129/apnic54trainingdevel_1663116194.pdf

Infrastructure & Operations Updates

Che-Hoo Cheng

Infrastructure & Development Director

APNIC

#apricot2023



5x9s for Highly Critical Services

- Gap Analysis for RPKI services completed in Aug 2022
- 3-year plan drafted based on the recommendations in the report
 - 8 recommended actions to be done over 3 years (2023-2025)
 - **Services to cover: RPKI, RDNS, RDAP & whois (under Registry Product)**
- Improving availability monitoring and measurement will be the first step
 - Will publish our measurement methodology
- Community consultation to start by end of March
 - **To validate our draft plan**
 - In the form of online survey and interviews
 - Will publish blog story with details when we launch it
 - A summary of the Gap Analysis report will be shared as well

3-Year Implementation Plan for 5x9s (DRAFT)

Remediation	Possible Impact	Recommended Priority	Timeline to Complete
Improved monitoring & measurement (and measurement methodology published)	High	1	1H2023
Self-healing/recovery of application components	High	2	2H2023
Improved change management processes	High	3	2H2023
Improved 24 x 7 Tier 1 support	Medium	5	2H2023
Active / active infrastructure across sites	Medium	6	2024
Exact mirroring of NextDC infra to Interactive	Medium	7	2024
Resilience in people	High	4	2025
HA Application design – redesign application to be an active-active HA design	High	8	2025

Metrics under Consideration

- # of probes
 - Locations of probes
- Query-response RTT
- Threshold (percentage) to determine unavailability
- Others

Cloud and Interconnection Strategy

- High-level strategy only
 - Have more detailed plan which is subject to change from time to time
- Draft ready for internal reference in late 2021 after internal consultation
- Another round of internal reviews now
 - And need to polish it before publishing it
- Blog post scheduled for **end of March**
 - Feedbacks would still be welcome

A Sneak Peek – Not Final Yet

- **Overall High-Level Goals**
 - High availability, high performance and low latency as goals for all APNIC products and services
 - Security, integrity and resilience as the focuses
 - Minimise vendor lock-in
- **High-Level Cloud Strategy**
- **High-Level Network and Interconnection Strategy**

Security Infrastructure Upgrades

- Improve infrastructure security and resilience of APNIC systems across areas including:
 - Privilege access management (PAM) for end users
 - Zero-Trust Network / Server Access (ZTNA)
 - Information security compliance tool (ISO27001)
 - Application security orchestration and correlation (ASOC)

Technical Infra and Ops Improvement

- Improve the process flow for IT support using ITILv4 principles
 - Deploy new ITSM tools to replace RT for IT service requests, incident/problem management and change enablement/management
- Improve 24x7 Tier-1 support by exploring various outsourcing options
- Migrate older hosts to operating systems with long-term support to improve security and stability

APNIC Website Improvements

Lily Che

Sr. UX/UI Designer

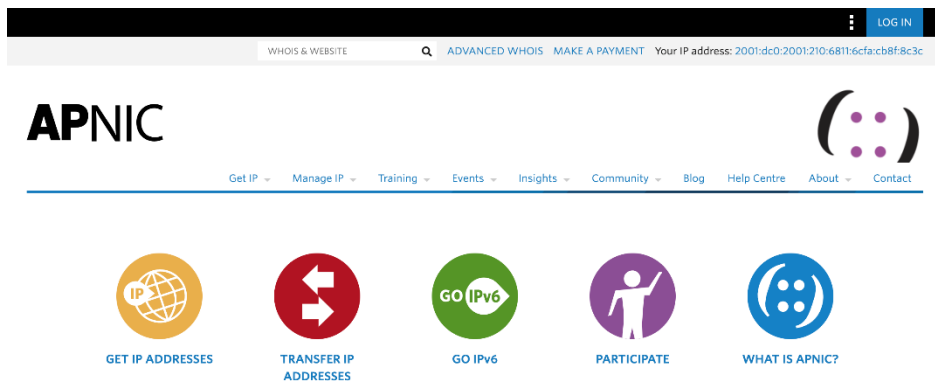
Overview

- APNIC Survey background data
- Our investigation
- Activity plan – Website refresh
- How you can contribute

APNIC Survey background data

APNIC website is our most visible site with the most website traffic.

- The front door to access our products and services, particularly important to newcomers



APNIC is the Regional Internet Registry administering IP addresses for the Asia Pacific

APNIC Survey background data

Despite this, Members in the APNIC Survey have been reporting a decreased use from 77% in 2018 to 56% in 2020 and now 52% in 2022. It also ranked low among APNIC products for satisfaction.

APNIC										
2022 APNIC Survey Report, August 2022										
APNIC Services used by respondents over the last 2 years. (Have used, interacted or contacted APNIC in the last 2 years: Base n=1,405)										
	2018			2020			2022			Change 2020-2022
	Total	Members	Stakeholder	Total	Member	Stakeholder	Total	Member	Stakeholder	
Sample Size	1,241	905	336	1,378	1,007	372	1,403	980	423	
* MyAPNIC	62%	62%	-	69%	69%	-	61%	61%	-	-8%
APNIC website	76%	77%	70%	60%	56%	70%	52%	52%	52%	-8%
APNIC Whois Database	56%	56%	54%	52%	55%	44%	47%	49%	43%	-5%

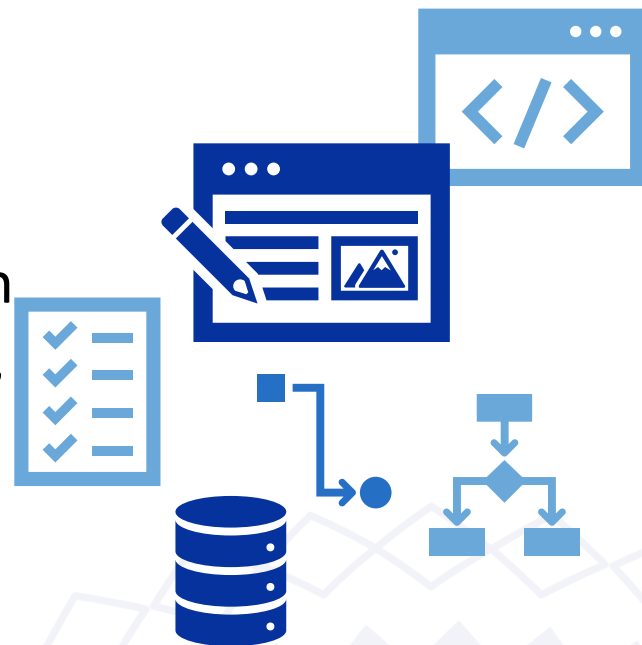


Our investigation

- We spent some time in 2022 investigating how the APNIC website was performing.
 - Analytics:
 - System Usability Scale (SUS) score - 68.
 - User research findings:
 - People struggled to find what they need
 - Feedback about updating the look and feel of the site

Activity plan – Website refresh

- This will be a multi-year project (2023/24); we are just getting started
- We have made a commitment to refresh the APNIC website in a number of areas, including...



Navigation (information architecture)

Home	APNIC A...	APNIC La...	About us	Billing	Contact	Events &...	Get IP	Members	My APNIC	News	Resource
A guide about how to receive	2	1	3	4	3	5	5	1			
A guide to learning how to re...	7	1	2	4	5	1					
A list of all the APNIC confer...	15	1	1	2	8	3				1	
A list of all the community eve...	1	3				8					
A list of the resource regist...	1	4			1	5	7				
APNIC Foundation	1	10			1	2					
APNIC Labs is site that provi...	18	2	1	1	1	1					
APNIC digital application to w...	3	2	2		1	5					
APNIC guidelines for IPv6 ad...	3		1			18					
APNIC plans and strategies to		19				2	2				
Become a Community Trainer	10	4	3			3					
Benefits of being a member o...	1	11				2	5				
Check your eligibility to vote...	1	3				2					
IPv6 roadmap	1	4				4					
Dates of the next Asia Pacific...	2	4			7	2					
Participating Projects	10	1				4					
Get more IPv6 addresses						18					
How much it costs to obtain a	1				1	17					

Home	APNIC A...	APNIC La...	About us	Billing	Contact	Events &...	Get IP	Members	My APNIC	News	Resource
A guide about how to receive	2	1	3	4	3	5	5	1			
A guide to learning how to re...	7	1	2	4	5	1					
A list of all the APNIC confer...	15	1	1	2	8	3				1	
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APNIC guidelines for IPv6 ad...	3		1			18					
APNIC plans and strategies to		19				2	2				
Become a Community Trainer	10	4	3			3					
Benefits of being a member o...	1	11				2	5				
Check your eligibility to vote...	1	3				2					
IPv6 roadmap	1	4				4					
Dates of the next Asia Pacific...	2	4			7	2					
Participating Projects	10	1				4					
Get more IPv6 addresses						18					
How much it costs to obtain a	1				1	17					

Each table cell shows the number of times a card was sorted into the corresponding category. The darker the cell, the more participants agreed with this grouping.

Home	APNIC A...	APNIC La...	About us	Billing	Contact	Events &...	Get IP	Members	My APNIC	News	Resource
APNIC deployment online cou...	18										
Network security tutorial	19										
IPv6 roadmap	17										
APNIC Labs is site that provi...	18	2	1		1	1				1	
A list of all the APNIC confer...	15	1				4				2	1

Each table cell shows the number of times a card was sorted into the corresponding category. The darker the cell, the more participants agreed with this grouping.

APNIC

Get IP

Manage IP

Training

About

Events

APNIC Academy

Community Trainers

Courses

Events

Insights

Community

Blog

Help Centre

About

Contact

GET IP ADDRESSES

TRANSFER IP ADDRESSES

GO IPv6

PARTICIPATE

WHAT IS APNIC?

APNIC is the Regional Internet Registry administering IP addresses for the Asia Pacific

Oranges

Milk

Apples

Bananas

Cream

Peas

Carrots

Pears

Locks

Potatoes

Yogurt

Fruit

0 items

Click to rename

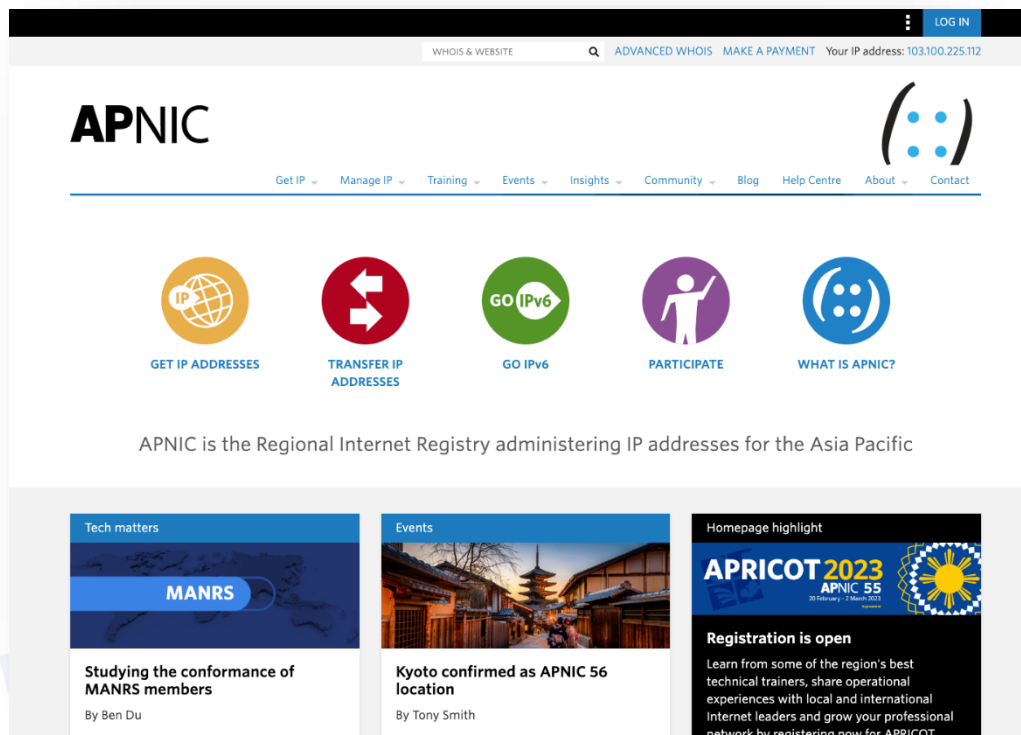
Button

1 item

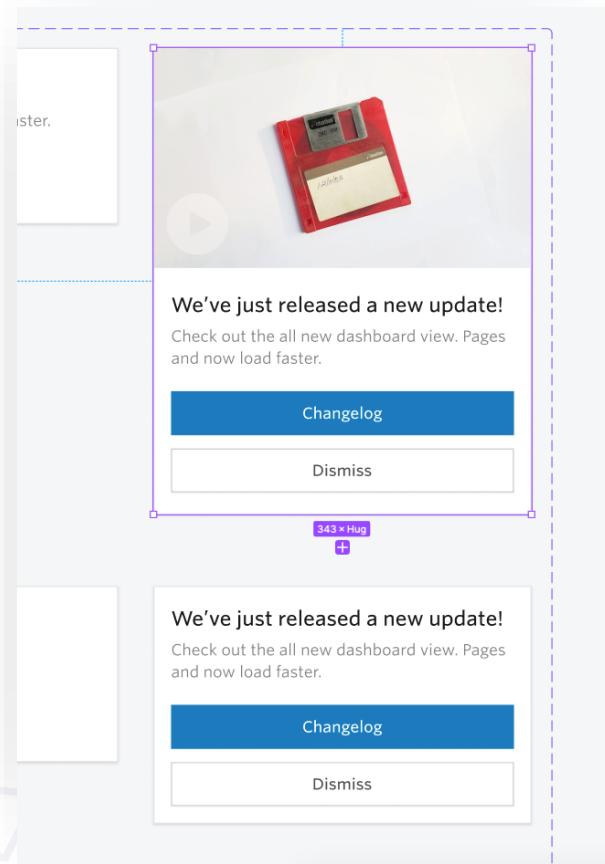
Vegetables

0 items

Visual design



#apricot2023



Content

- ▶ Community demographics
- ▶ Resource Policies
- ▶ Fellowship
- ▶ APNIC in the Internet ecosystem
- ▶ Participate
- ▶ **Community Technical Support**
 - ▶ Research, information and outreach
 - ▶ Supporting Network Operator Groups
 - ▶ APNIC Technical Assistance
 - ▶ Memberships & Partnerships
 - ▶ Fellowships
 - ▶ APNIC Hackathons
 - ▶ Internet infrastructure
 - ▶ CERTs
 - ▶ Root server deployments
 - ▶ ISIF Program
 - ▶ Test Traffic Measurement

Community Technical Support

APNIC provides financial, technical, and informational support to the Internet technical community to promote the growth of the Internet, particularly in developing economies where the deployment of Internet services can be challenging.



Research, information and outreach

Get up-to-date information on routing, security, DNS, IPv6, policy and IP addressing issues.

[Statistics](#) | [IPv6](#)



Supporting NOGs

Share experiences, make new industry contacts, and learn from other network operators in your local economy by participating in NOG events. There are more than [15 NOGs](#) in the APNIC region and new groups are being formed regularly.

[NOGs](#)



Technical Assistance

APNIC provides Technical Assistance to better support APNIC Members by understanding the issues they face in their day-to-day network operations, and by sharing expertise on best and current Internet technical practice.

Supporting Network Operator Groups

Network Operator Groups (NOGs) are informal forums that bring together network operators, network engineers and other technical professionals to discuss matters relating to routing, network security, peering and interconnection, and other operational Internet issues. While the forums are generally structured around sharing relevant technical information, they also provide training and other skills development opportunities to the region's operators.

NOGs promote Internet infrastructure stability, security, and network coherence, and facilitate better Internet accessibility for the community. They are open to all, including students, and are attended by various stakeholders including representatives of ISPs, telcos, mobile operators, CDNs, academia, governments, and cloud, enterprise, and financial organizations.

APNIC engagement

APNIC is committed to supporting the region's NOGs. On behalf of its Members, APNIC actively supports NOGs in the region



Search

APNIC Whois Search



To assist you with debugging problems, this whois query was received from IP Address:

103.100.225.112

Search for

e.g. 203.119.42.0/24

Search

Reset

WHOIS & WEBSITE



ADVANCED WHOIS

#apricot2023

ASN implementation date: *

2020-09-14


September 2020

peering networks.

Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Email: *

Good contrast is useful for all users but is especially important for people with low vision or colour blindness and people viewing your website on a mobile device in a bright or sunny location.

Element	Sample	Foreground	Background	Expected	Actual
Date in default state		#2779AA	#D7EBF9	4.5:1	3.9:1
Selected date		#FFFFFF	#3BAAE3	4.5:1	2.6:1

These are base black and white color styles to quickly swap out if you need to.

AAA 21.1	AAA 21:1										
White #FFFFFF	Black #000000										
Gray Gray is a neutral color and is the foundation of the color system. Almost everything in UI design — text, form fields, backgrounds, dividers — are usually gray.											
AAA 8.23	AAA 8.09	AAA 7.75	AA 6.71	AA 5.26	2.58	AA 4.95	AAA 7.65	AAA 10.41	AAA 14.74	AAA 17.77	
25 #7FC7C7	50 #AFAFAF	100 #F3F3F3	200 #E3E3E3	300 #CCCCCC	400 #B8B8B8	500 #999999	600 #666666	700 #4D4D4D	800 #333333	900 #1A1A1A	
Primary The primary color is your "brand" color and is used across all interactive elements such as buttons, links, inputs, etc. This color can define the overall feel and can elicit emotion.											
AA 5.5	AA 5.50	AA 5.38	AA 4.77	AA 5.45	2.88	AA 4.6	AA 5.84	AAA 8.67	AAA 10.78	AAA 14.39	
25 #7777F8	50 #4779FC	100 #E3F3F9	200 #D9E3F5	300 #99CAE5	400 #66B0D7	500 (Primary) #0078BD	600 (OG) #00A4A4	700 (OG) #004971	800 (OG) #003957	900 #002D44	
Error Error colors are used across error states and in "destructive" actions. They communicate a destructive/negative action, such as removing a user from your team.											
AAA 9.51	AAA 9.0	AAA 8.1	AA 6.9	AA 5.02	2.78	AA 4.53	AAA 7.32	AA 9.77	AAA 12.94	AAA 16.58	
25 #FF7F6A	50 #FF3F2	100 #FEE4E2	200 #FECDC8	300 #F5DAB9	400 #FFD066	500 #FF3327	600 (Error) #990020	700 #8D001A	800 #6A0013	900 #400000	
Warning Warning colors can communicate that an action is potentially destructive or "on-hold". These colors are commonly used in confirmations to grab the users' attention.											
AA 5.28	AA 5.17	AA 4.75	AA 4.57	3.90	1.63	2.34	3.49	AA 5.40	AAA 7.49	AAA 9.48	
25 #FFC75F	50 #FFA83B	100 #FFD0C7	200 #FFC996	300 #FFD863	400 (Warning) #FFC037	500 #FF7D09	600 #DCC803	700 #B8A708	800 #93370D	900 #7A2E0E	
Success Success colors communicate a positive action, positive trend, or a successful confirmation. If you're using green as your primary color, it can be helpful to introduce a different hue for your success green.											
AAA 8.61	AAA 8.19	AAA 7.73	AA 6.04	4.08	2.74	AA 4.53	AA 6.43	AAA 8.69	AAA 11.57	AAA 14.35	
25 #90FFD	50 #50FFB3	100 #E2F7E7	200 #C7F7C7	300 #B0C0B0	400 #40A05E	500 (Success) #208036	600 #10A02B	700 #057202	800 #0F421A	900 #083713	
Info Info colors communicate a neutral action, additional help, or a useful note. They are great for bringing attention to important information when further differentiation is needed from other communication types above.											
AA 6.63	AA 6.13	AA 5.53	AA 4.52	2.95	3.25	AA 4.70	AA 5.84	AA 6.84	AAA 10.94	AAA 14.77	
25 #73CDE4	50 #4AE2FC	100 #32C2F5	200 #1BC8E5	300 #00C0C5	400 #00A082	500 #00609F	600 (Info) #004E94	700 #003685	800 #002579	900 #001738	

Get involved: Your contribution matters!

- Reviewing the navigation/information architecture with Members and the community
- Activities to help in creating the new navigation here at APNIC 55
- Visit us at the desk to take part and also get some APNIC merch for taking part

Task 1 of 2

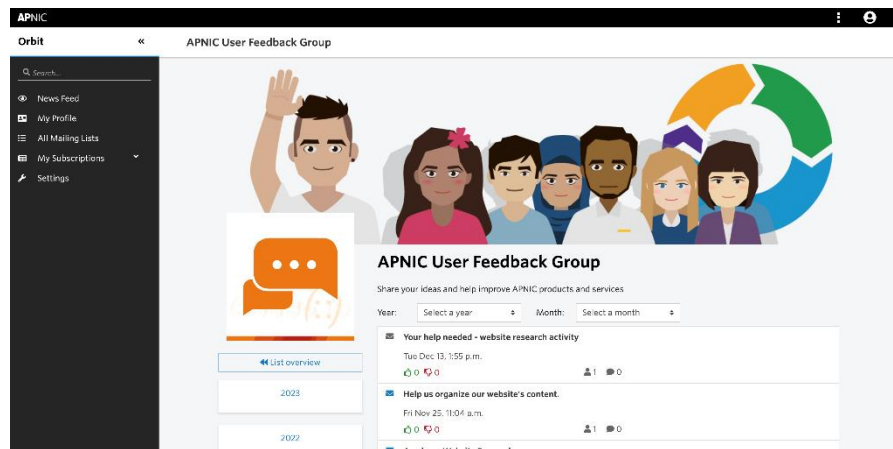
[Skip this task](#)

Suppose that you're not a BananaCom customer - find the lowest cost home broadband subscription

Start task

Don't have time to visit us in person?

- Take part online — head to orbit.apnic.net to find out more and provide feedback
- Orbit is our community platform where you can help us with this project or provide feedback on any of the products and services you have seen here today



Thank you!

2023 APRICOT APNIC 55

MANILA, PHILIPPINES

20 February – 2 March 2023

[#apricot2023](https://twitter.com/apricot2023)

