

# APNIC Activity Report 2017

APNIC 45 Annual General Meeting  
28 February 2018  
Kathmandu, Nepal

# APNIC



*“A global, open,  
stable and secure  
Internet that serves  
the entire Asia  
Pacific community”*

# Activities



Serving APNIC Members



Supporting Regional Internet  
Development



Cooperating with the Global  
Internet Community



# APNIC Activities



Serving APNIC Members



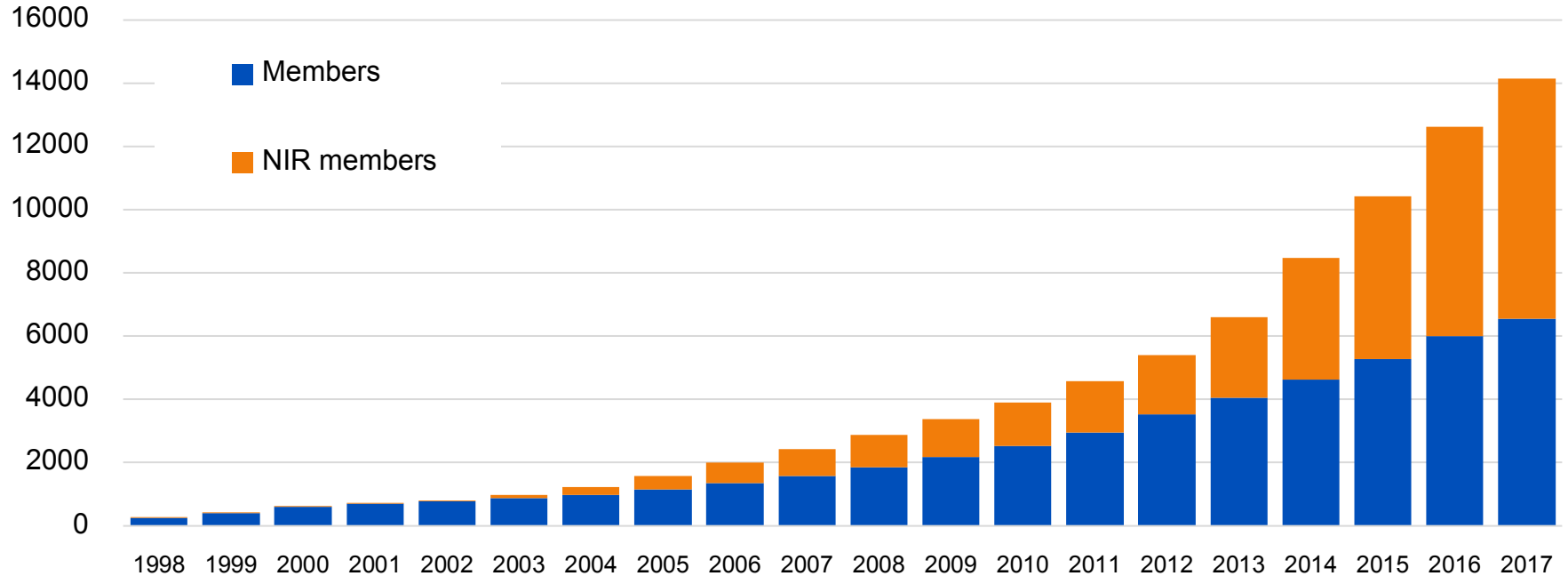
Supporting Regional Internet  
Development



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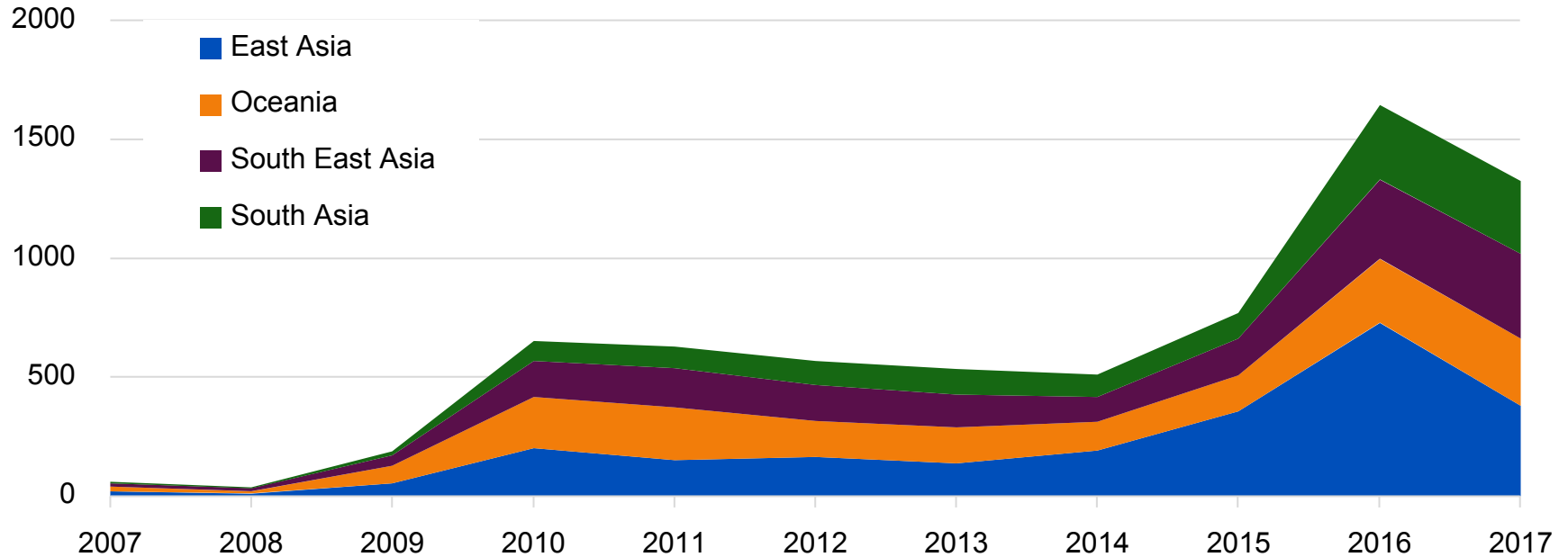
# Membership



As at 31 Dec



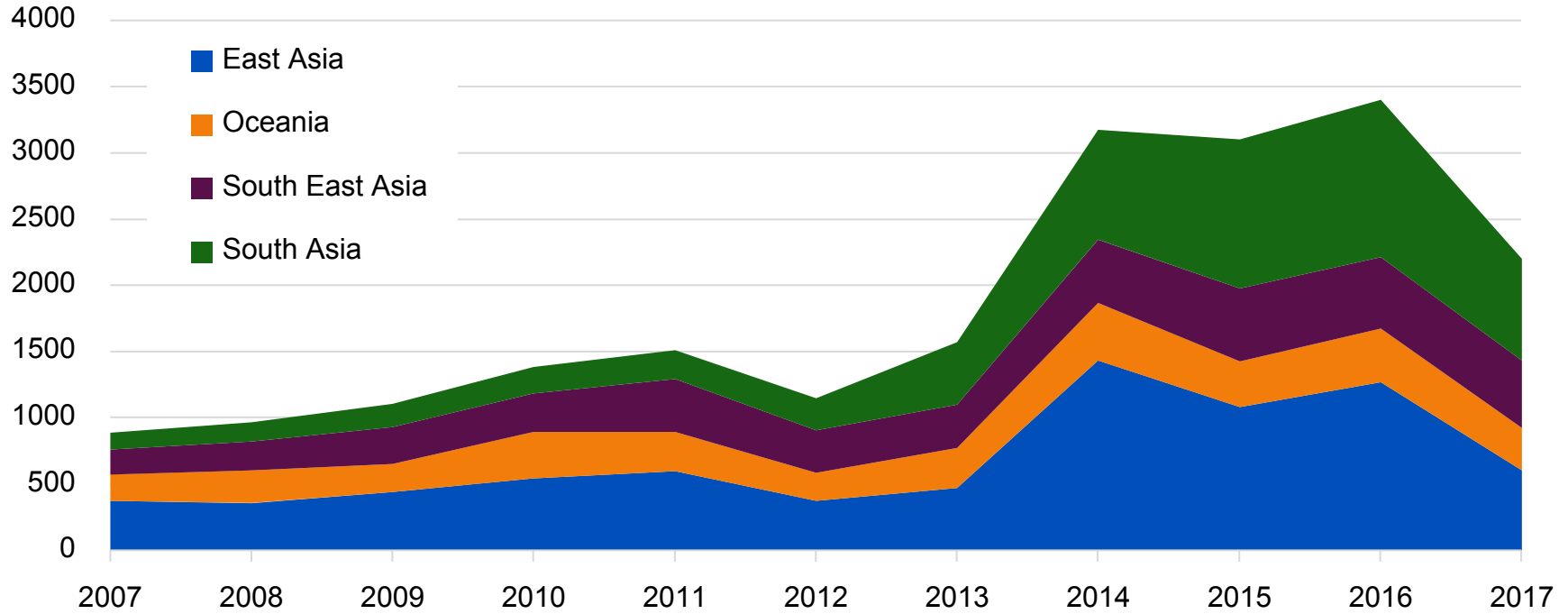
# IPv6 Delegations



As at 31 Dec



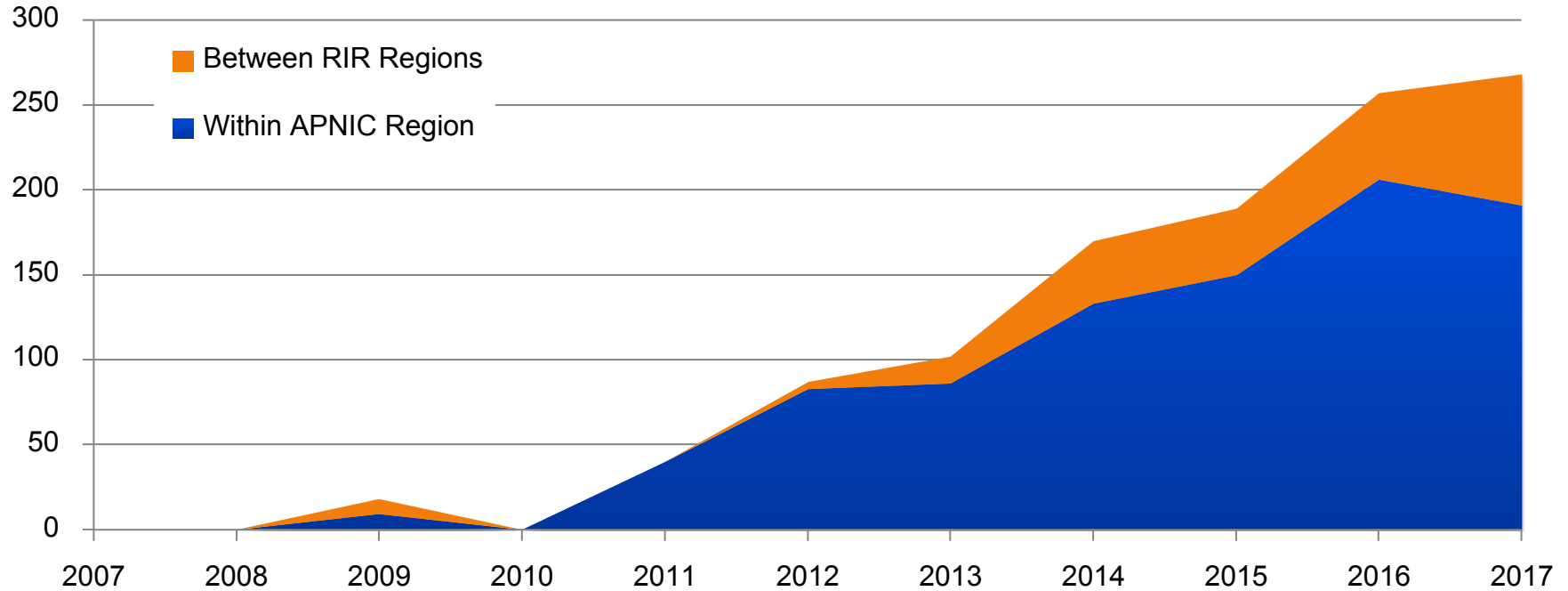
# IPv4 Delegations



As at 31 Dec



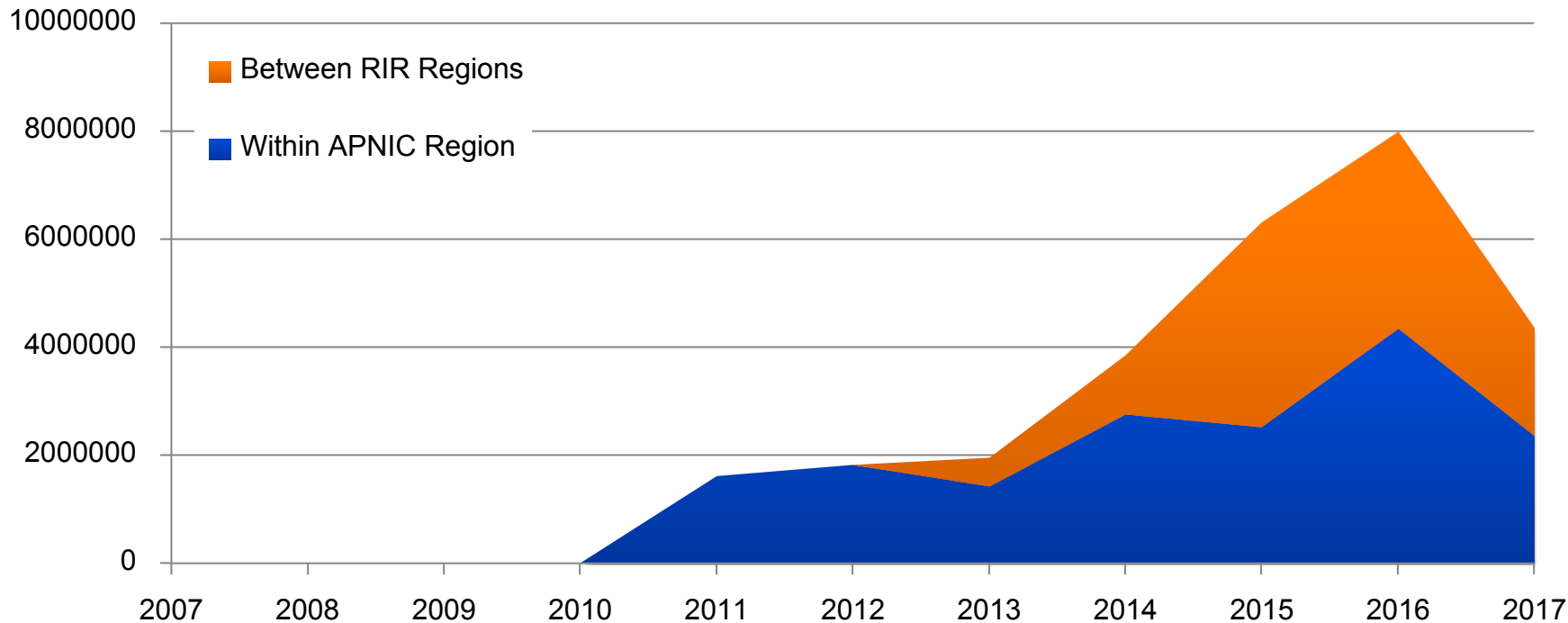
# IPv4 Transfers



As at 31 Dec

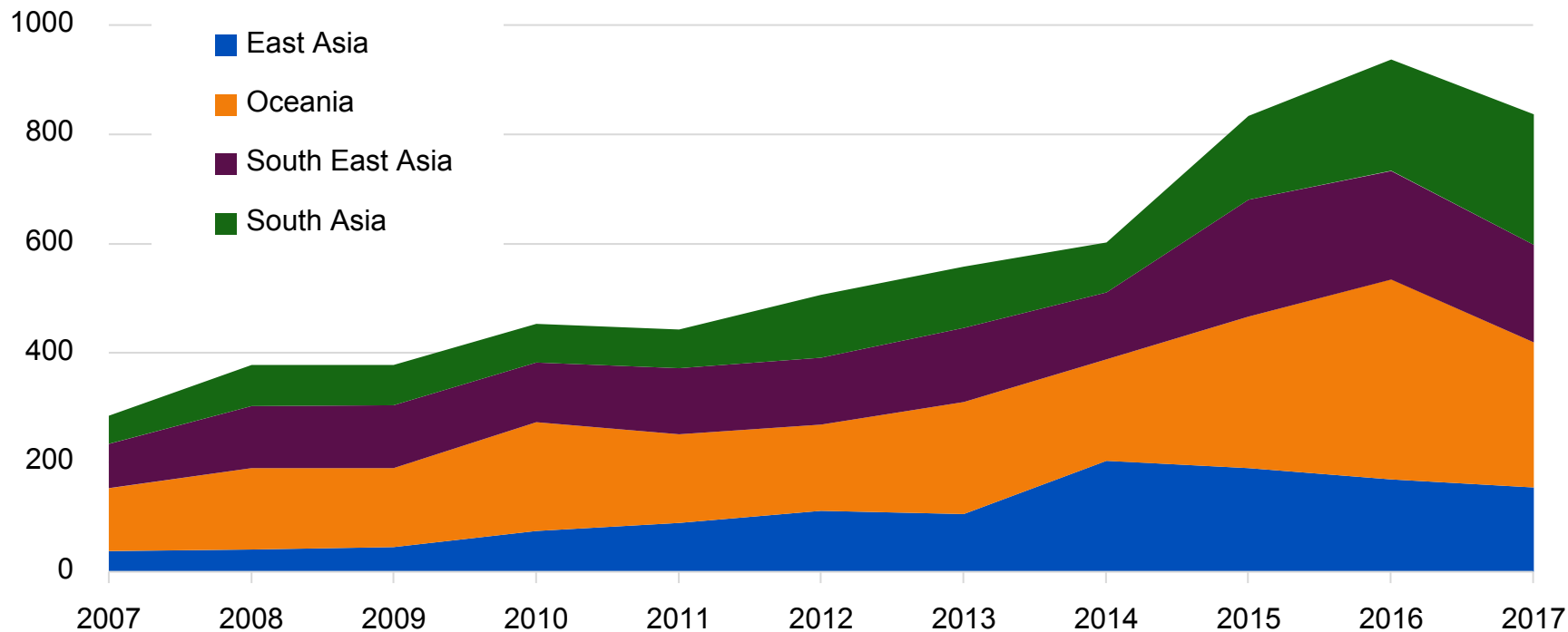


# Total IPv4 Transferred



As at 31 Dec

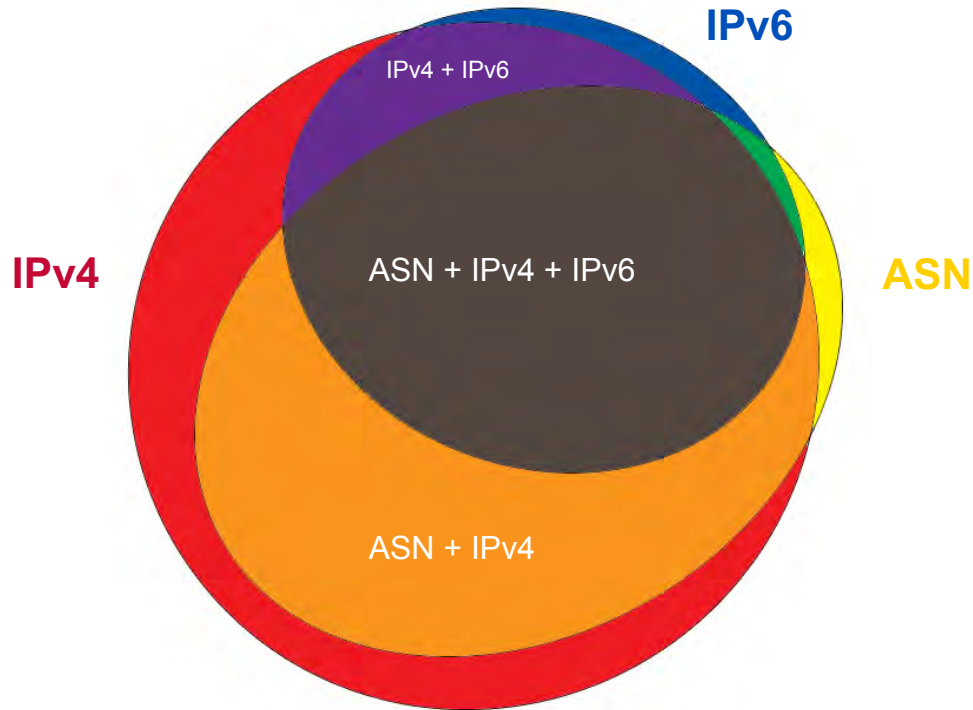
# ASN Delegations



As at 31 Dec



# Resource Holdings



% of Members holding	
ASN	75%
IPv4	96%
IPv6	57%

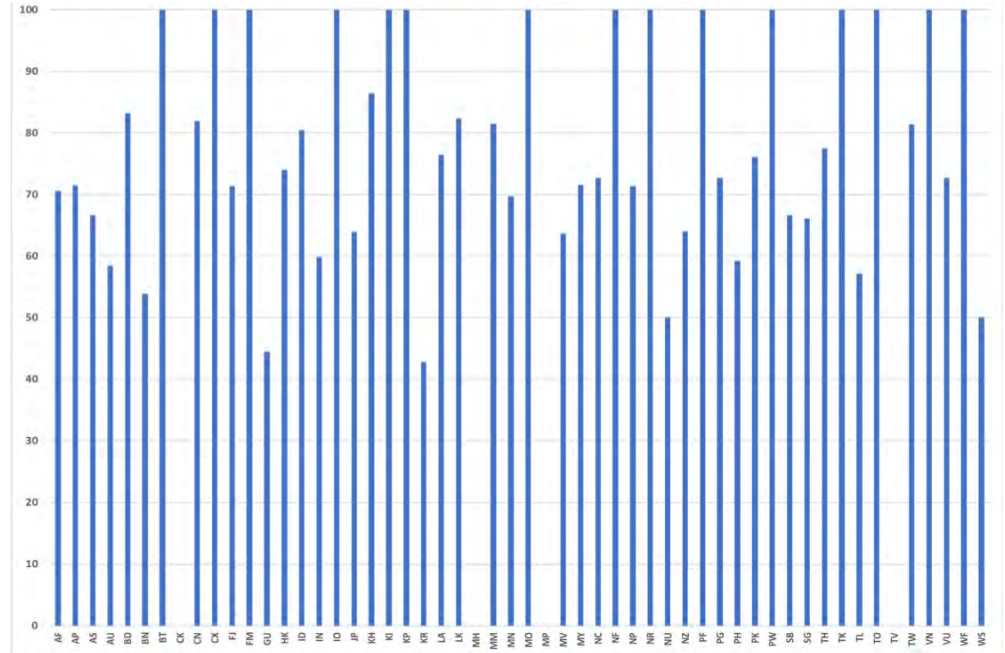
As at 31 Dec



# Whois services

Completed whois master server upgrade to v4  
 APNIC RDAP code contributed to RIPE whois  
 New organization object  
 68% of account holders have updated org object  
 New last modified attribute to replace changed

[apnic.net/whois](http://apnic.net/whois)  
[apnic.net/rdap](http://apnic.net/rdap)



Org object updates by economy



whois 470 qps  
 RDAP 5 qps



# Whowas

Provides historical whois results  
Improved user interface  
IETF draft RDAP extension for batch results

[apnic.net/whowas](http://apnic.net/whowas)

The screenshot displays the APNIC WhoWas interface for the IP address 202.12.31.0/24. The interface includes a search bar, a timeline from 2008 to 2017, and a detailed view of the current record. The current record is for the network 202.12.31.0 - 202.12.31.255, assigned to APNIC Infrastructure Contact. The record includes fields for network name, country (AU), type (ASSIGNED PORTABLE), description (Anycast node), handle (AIC1-AP), name, kind (group), address, voice, fax, email, and remarks. The interface also shows a list of historical records on the left and a list of related records on the right.

network	name	country	type	description
202.12.31.0 - 202.12.31.255	APNIC-ANYCAST-1	AU	ASSIGNED PORTABLE	Anycast node to be located in (but not limited to) HongKong, USA, The Netherlands

handle	name	kind	address	voice	fax	email	remarks
AIC1-AP	APNIC Infrastructure Contact	group	6 Cordelia Street South Brisbane QLD 4101	+61 7 3858 3100	+61 7 3858 3199	helpdesk@apnic.net	Infrastructure Contact for APNIC's own-use network blocks

network	name	country	type	description
202.12.31.0 - 202.12.31.255	APNIC-SERVICES-HK	HK	ASSIGNED PORTABLE	Asia Pacific Network Information Centre Regional Internet Registry for the Asia-Pacific Region

handle	name	kind	address	voice	fax	email	remarks
IRT-APNIC-IS-AP	IRT-APNIC-IS-AP	group	South Brisbane, Australia			helpdesk@apnic.net	APNIC Infrastructure Services



# Resource Certification

Resource certification extended to historical resource holders  
New user interface deployed in MyAPNIC  
Delta protocol (RFC 8182) work completed for Q1 2018 release  
Ready to ROA  
    NZ, VN, PH, BN, SG, KH, MY, TW  
All resources (0/0) Trust Anchor transition completed

[apnic.net/rpki](http://apnic.net/rpki)



Resource Certification	2017
Members created certificates	877
Members created ROAs	499
IPv4 under ROAs (/24s)	46,815
% allocated IPv4	3.34%
IPv6 under ROAs (/48s)	13,614,538
% allocated IPv6	0.99%



RPKI uptime 99.998%  
23 qps



# Training & TA



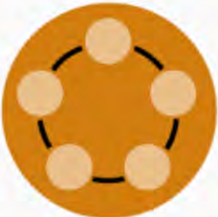
Training, Lao PDR

[training.apnic.net](http://training.apnic.net)

	2017
Face-to-face training	61
Locations	25 economies; 36 cities
Trainees	1,988
Community Trainers	11
Courses	21
Economies	8
eLearning sessions	129
Trainees	679
Training videos	123
Views	536,805
Curriculum	New SDN course Network Security course fully updated
Technical Assistance (TA)	17


# APNIC Academy






Internet Resource Management

Course



Routing Basics

Course



Introduction to CyberSecurity

Course

[apnic.academy](https://apnic.academy)

Launched April 2017

Free public access

2017: Introduction to  
CyberSecurity and IRM

Enrolled: 1,852

Certified: 318

New: Routing Basics

Coming:

Introduction to IPv6

Internet Routing

Protocols

APNIC Address Policies

DNS Concepts





# Infrastructure services

Service	Progress
Technical infrastructure improvements	Two additional <b>DNS anycast</b> servers deployed New core <b>network switches</b> New <b>network monitoring</b> system New <b>firewall</b> deployed as clustered node across Brisbane DCs New CWDM and vPC <b>inter-site links</b> between Brisbane sites Improvements to <b>bandwidth and redundancy</b> of interconnections <b>OS and software upgrades</b> to infrastructure servers, load balancer, storage, network devices
ISO 27001:2013 Information Security Standard	Information security management system framework, policies and procedures documented Additional roles and responsibilities assigned to staff following audit

# Activities



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Cooperating with the Global  
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# Policy



## Implemented

- prop-116: Prohibit to transfer IPv4 addresses in the final /8 block
- prop-117: Returned IPv4 address management and Final /8 exhaustion
- prop-121: Updating Initial IPv6 allocation policy
- prop-122: Updating Subsequent IPv6 policy

## Policy engagement

- Updated web content
- Webinars and NOG briefings
- Translation of summaries and outcomes
- Newcomers mock policy SIG @ APNIC 44

[apnic.net/policy](https://apnic.net/policy)



### Participate in APNIC Policy

▼ YOU    ► COMMUNITY    ► RESULTS

**YOUR VOICE COUNTS**

- Everyone can participate - not just your boss
- It doesn't matter how much experience you have
- It's a great way to build your profile and contribute to the Internet
- You can directly impact the way APNIC manages internet numbers

Get involved in policy discussion!

The first step is to subscribe to the mailing list

[SUBSCRIBE NOW!](#)

# Community



88

**NOGs:** Participated in 24 NOGs

88

**Root servers:** J-root installed in NP;  
in progress at PG and FJ

88

**MoUs:** Sri Lanka CERT|CC, ISC,  
KISA, APIA, Netnod

88

**IXPs:** Support in PG and FJ

88

**Fellowships:** 48 fellows at APNIC 44  
(23 female), new Returning Fellows  
category

88

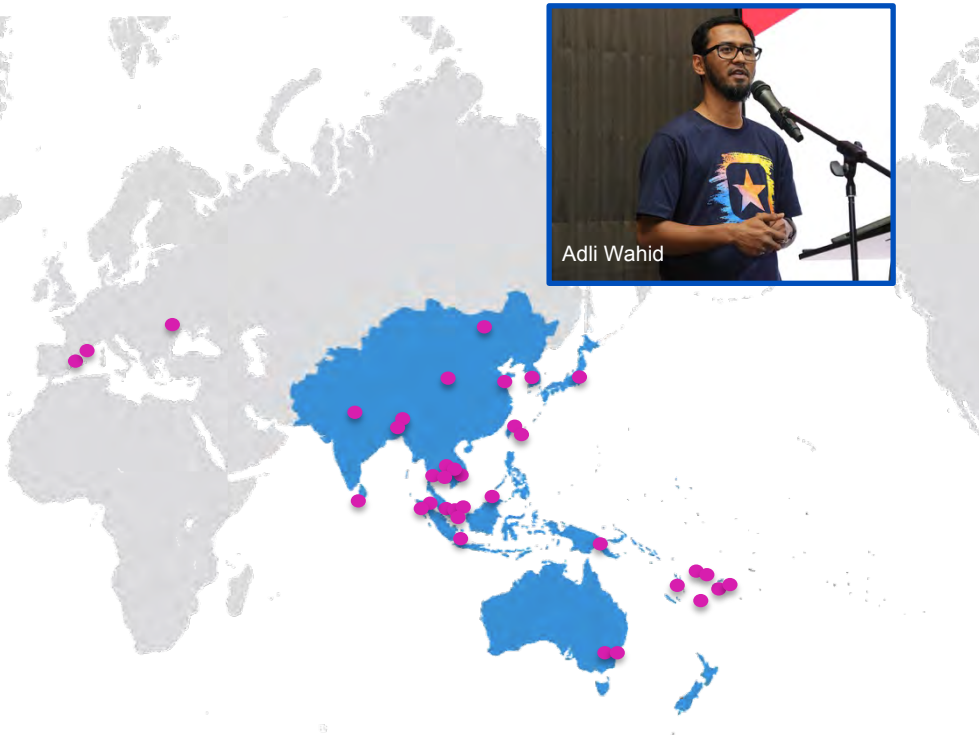
**Sponsorships:** 40 regional events  
(including 19 NOGs)

# BIND 9.12 development



- ∞ Aggressive NSEC caching RFC 8198
  - ∞ DNS resolvers discard junk queries instead of sending them to the root
  - ∞ Reduces load on root servers, improves resilience, efficiency and scalability
- ∞ APNIC sponsored implementation in ISC's BIND 9.12 (open source)

# Security



[apnic.net/security](https://apnic.net/security)

Security training: 30 courses

LEA training: 4 events  
SG (2), FJ and KR

Other engagements: 37  
APSIG 2017, APriGF 2017, ASEAN,  
KISA APISC, CNCERT, INTERPOL  
SG, APCERT, RISE, ITU Cyberdrill

FIRST: MoU signed, Events at  
APRICOT 2017 and APNIC 44

Adli Wahid re-elected to FIRST  
Board

Security team: Additional Internet  
Security Specialist

Security blog posts: 55

# Pacific CERT Development



- Supporting CERT development in the Pacific (FJ, PG, TO, VU, SB)
- CERT.to: First birthday
- CERT-PNG: Launched
- Mentoring, training, and technical assistance
- Coordination with APCERT, CERT-Australia, Tonga CERT, ITU and others
- \$200K funding via APNIC Foundation (2 years)



# IPv6



[apnic.net/ipv6](http://apnic.net/ipv6)

- ∞ **Training:** 24 face-to-face, 712 trainees
- ∞ **eLearning:** 25 sessions, 153 trainees
- ∞ Regional events: 15 presentations
- ∞ Joint APNIC/ITU IPv6 Infrastructure Security Workshops in TH and BT
- ∞ Revamped IPv6 web pages, 19 deployment success stories
- ∞ **World IPv6 Day, 6/6/2017:** video, blogs, social media, Member emails
- ∞ IPv6 blog posts: 77



# IPv6 Growth 2017



Members  
holding IPv6  
addresses

50% → 57%

IPv6 capability  
in APNIC region

7.5% → 19.2%



# Conferences



	APRICOT 2017	APNIC 44
Delegates	654	383
Economies	56	43
APNIC Members	178	128
Remote session attendance	1,595	883
Fellowships		
♾ Men	28	23
♾ Women	12	25

[conference.apnic.net](http://conference.apnic.net)

# APNIC Foundation



[apnic.foundation](http://apnic.foundation)

**First year** of operation: 2017

**Mission:** To build the APNIC Development Programme

Effectively, the **fund raising arm** of APNIC

Two staff seconded from APNIC:

**Duncan Macintosh, Sylvia Cadena**

Three Board members appointed:

**Edward Tian (CN); Sharad Sanghi (IN); Sylvia Sumarlin (ID)**

# ...some good news!



ISIF Asia chosen as a WSIS 2018 Champion in the ITUs WSIS prizes

More than 685 projects submitted to the awards globally

Winners will be announced 20 March 2018

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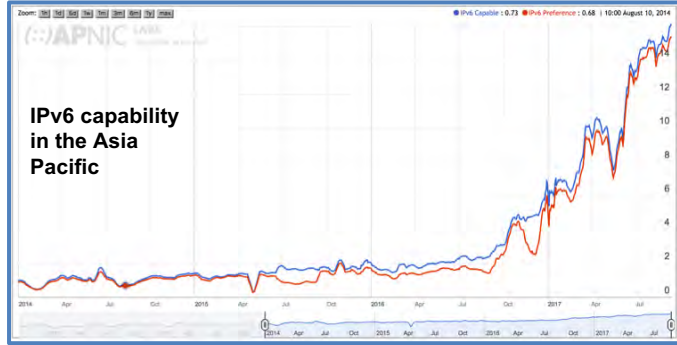


Cooperating with the Global  
Internet Community





# Global Research



Geoff Huston

Presentations: 32, at IETF, PTC, OARC, RIRs, NOGs

Blog posts: 27

Research topics:

- DNSSEC KSK rollover
- IPv6, Extension Headers and IPv6 Fragmentation
- QUIC and BBR
- DNS related research with ICANN (contract extended to 2018)
- DNSSEC and NSEC caching
- Geoff Huston continues on SSAC



# DNSSEC KSK Rollover

**Quick Guide:**  
Prepare Your Systems for the Root KSK Rollover

**What is the Root KSK Rollover?**

The Internet Corporation for Assigned Names and Numbers (ICANN) is planning to roll, or change, the "top" pair of cryptographic keys used in the Domain Name System Security Extensions (DNSSEC) protocol, commonly known as the Root Zone KSK. This will be the first time the KSK has been changed since it was initially generated in 2010, and is considered an important security step, in much the same way that regularly changing passwords is considered a prudent practice by any internet user.

Changing the key involves generating a new cryptographic key pair and distributing the new public component to DNSSEC-validating resolvers. As every internet query using DNSSEC depends on the root zone KSK to validate the destination, this will be a significant change. Once the new keys have been generated, web operators, such as ISPs, will need to update their systems with the new key so that when a user attempts to visit a website, it can validate it against the new KSK.

**Why You Need to Prepare**

Currently, 25 percent of global internet users, or 750 million people, use DNSSEC-validating resolvers that could be affected by the KSK rollover. If these validating resolvers do not have the new key when the KSK is rolled, and users relying on those resolvers will encounter errors and be unable to access the internet.

If you don't use DNSSEC, your system will not be affected by the rollover. However, you should know that DNSSEC is an important part of preventing domain name hijacking. Learn more about implementing DNSSEC here.

ICANN is offering a test bed for operators or any interested parties to confirm that their systems handle the automated update process correctly. Check to make sure your systems are ready by visiting: [go.icann.org/KSKtest](http://go.icann.org/KSKtest).



Ed Lewis, ICANN

- ICANNs rollover of DNSSEC Root Zone KSK (Key Signing Key)

- APNIC supported ICANN by:

- Identifying higher risk network operators performing DNSSEC validation

- KSK rollover blogs, resources + translations

- APNIC 44 information session

- Communication activities to identified operators to facilitate smooth rollover

- ICANN postponed keyroll to 2018



# Global Engagement



ICANN: ASO Review; CCWG-Accountability; IANA Services Review Committee

APT: PRF

ITU: WTDC prep

GCCS and GFCE

EUROPOL / INTERPOL Cybercrime Conference

World Internet Conference, Wuzhen

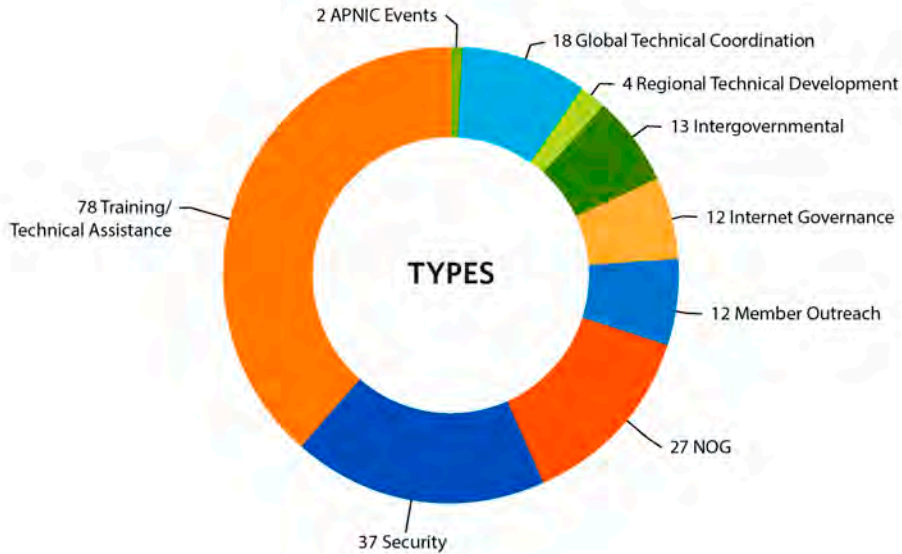
APEC: IPv6 @ TEL 55, with LACNIC

IGF Events: APriGF, APSIG, PKSIG, PacIGF, NPIGF, IGFA, IDIGF, NetHui, IGF 2017

APASA with ICANN, ISOC and DotAsia



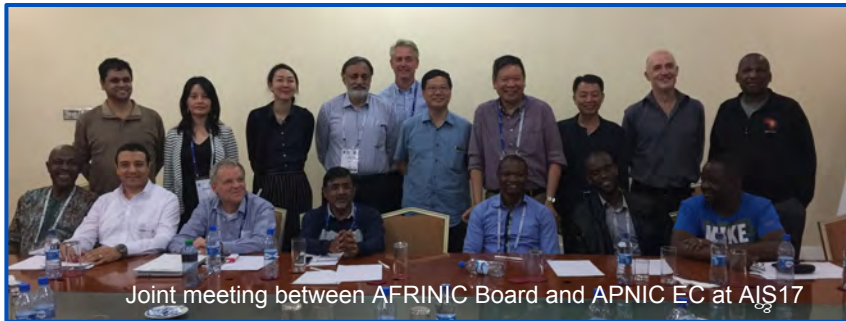
# Engagement Summary



# RIR Collaboration



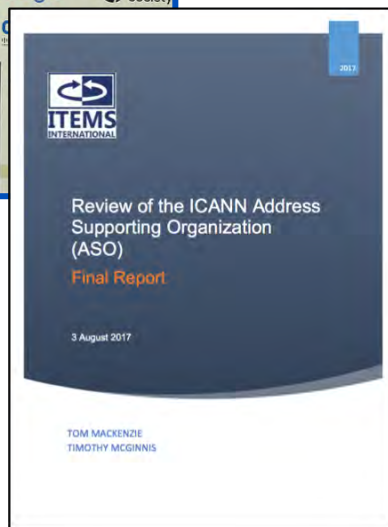
AFRINIC Staff Exchange Karen and Simon



Joint meeting between AFRINIC Board and APNIC EC at AIS17

- o Joint APNIC-AFRINIC Board meeting at AFRINIC 26 / AIS17
- o LACNIC-APNIC IPv6 workshop at APEC TEL 55
- o World IPv6 Launch 5<sup>th</sup> anniversary
- o NRO coordination: ECG, RSCG, CCG, finance, HR, legal
  - o RSCG meeting in Viet Nam
- o Participation at all RIR meetings in 2017
- o Staff exchange (AFRINIC x2)
- o Seed Alliance with AFRINIC and LACNIC

# ASO Review



Independent ASO Review commissioned by NRO EC in 2017

Report published August 2017: concluded ASO has a continuing purpose in the ICANN structure + 18 recommendations for improvements

Community consultation held APNIC 44 to discuss findings

NRO to launch global consultations in 2018 to discuss future structure of ASO

# Behind the scenes...

Passed ISO9001 surveillance audit  
Issued 8,264 invoices, prepared 833 journals, settled 429 expense claims, and reconciled 3,936 credit card transactions  
Managed 420 travel bookings  
Filled 16 job vacancies  
42 staff participated in 33 external training and professional development activities  
SharePoint, NetSuite, Nexonia, Halogen, Ungerboeck, SalesForce etc etc systems development and integration



APNIC Staff - 2016

# Next Conference



[conference.apnic.net/46](https://conference.apnic.net/46)

# Later...



APRICOT 2019 / APNIC 47  
Daejeon, Republic of Korea  
18 to 28 February 2019



APNIC 48  
Chang Mai, Thailand  
5 to 12 September 2019

# Stay in Touch!



[blog.apnic.net](http://blog.apnic.net)

[apnic.net/social](http://apnic.net/social)



# Thanks!