IANA Update

RIPE 86

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Rotterdam
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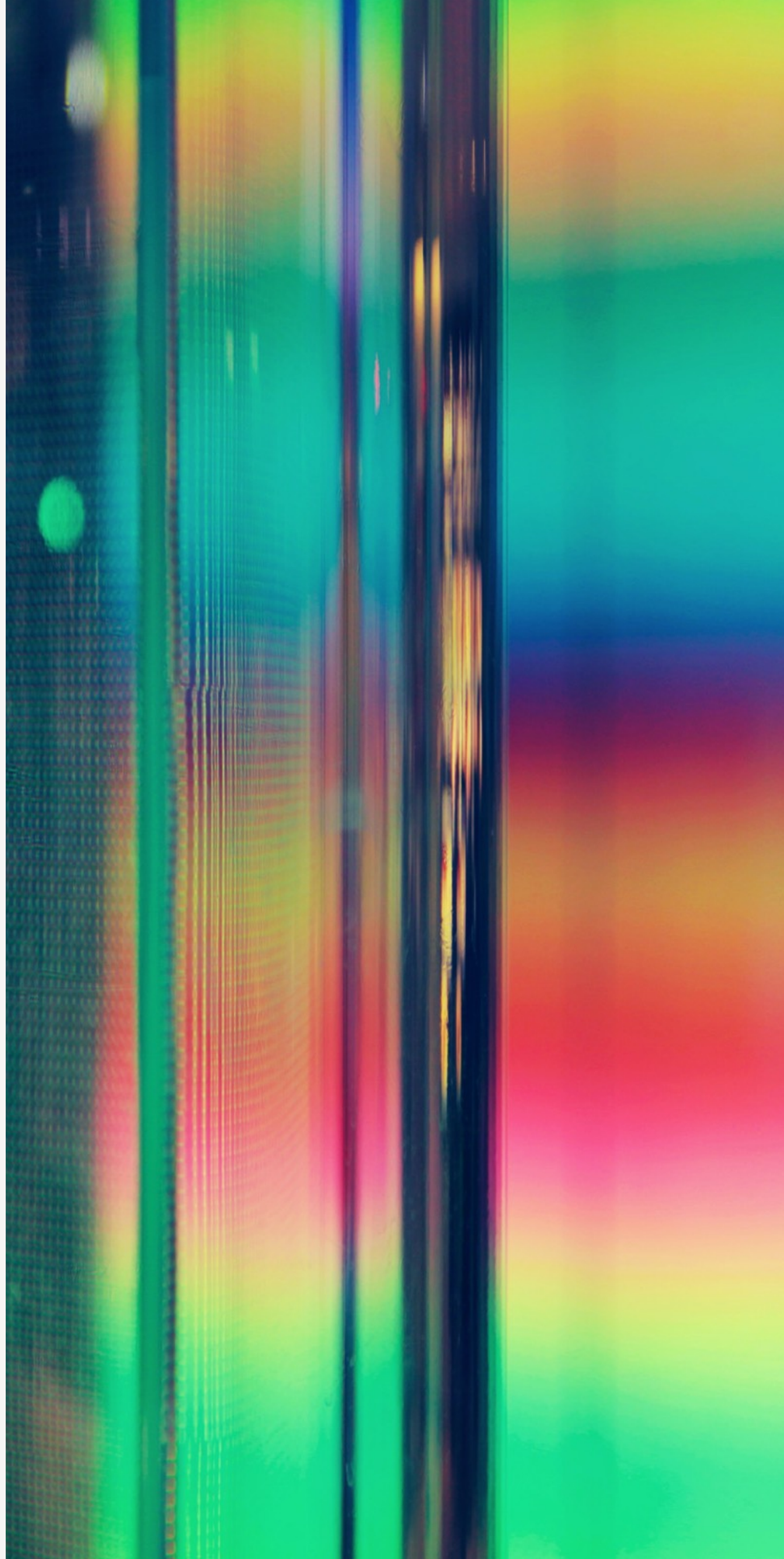
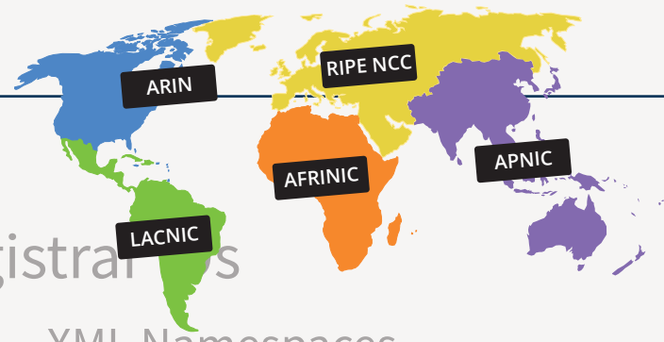
PTI | An ICANN Affiliate



Number Resource Services



URI Schemes

DNS Root Zone

Registrant IDs

XML Namespaces

DNS Resource Records

Port Numbers

SIP Parameters

vCard Parameters

IDNA Code Points

IPv4 Addresses

IP Versions

Special-use Domain Names

HTTP Status Codes

Private Enterprise Numbers

MPLS Return Codes

BGP Path Attributes

IPv6 Addresses

TLS Cipher Suites

Media Types

STUN Attributes

Kerberos Parameters

Language Tags

RTSP Feature Tags

YANG Modules

Autonomous System Numbers

PGP Public Key Algorithms

RADIUS Types

OSPF Parameters

SMI MIB Modules

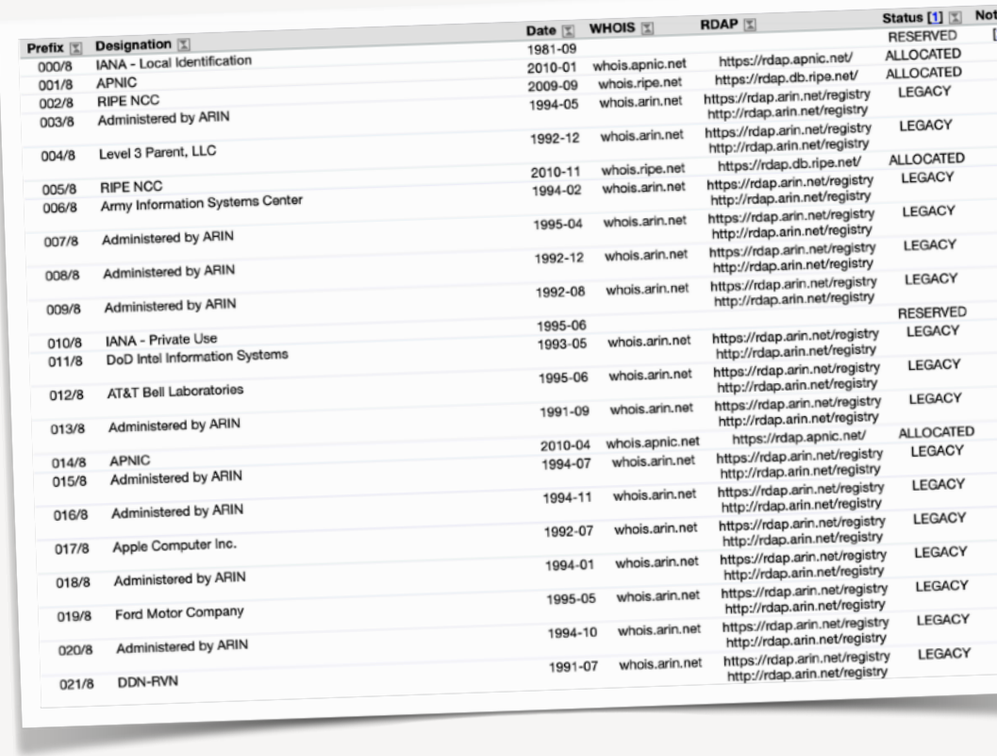
DNS Trust Anchor

Label Generation Rulesets

IPv4 Addresses

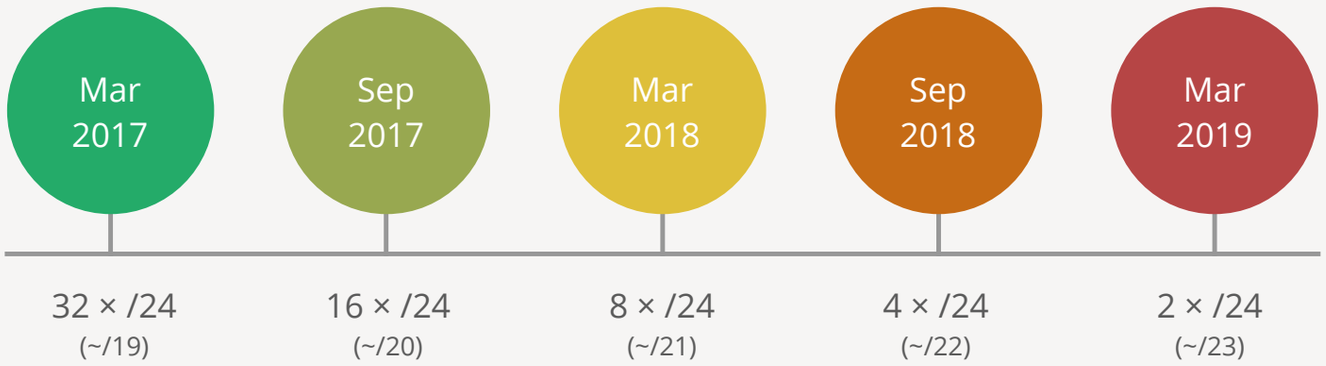
- 32-bit address space (≈4 billion addresses)
- 222 /8s designated for unicast use (≈86%)
- The last 5 of these /8s were allocated on 3 February 2011 to the RIRs

https://iana.org/assignments/ipv4-address-space



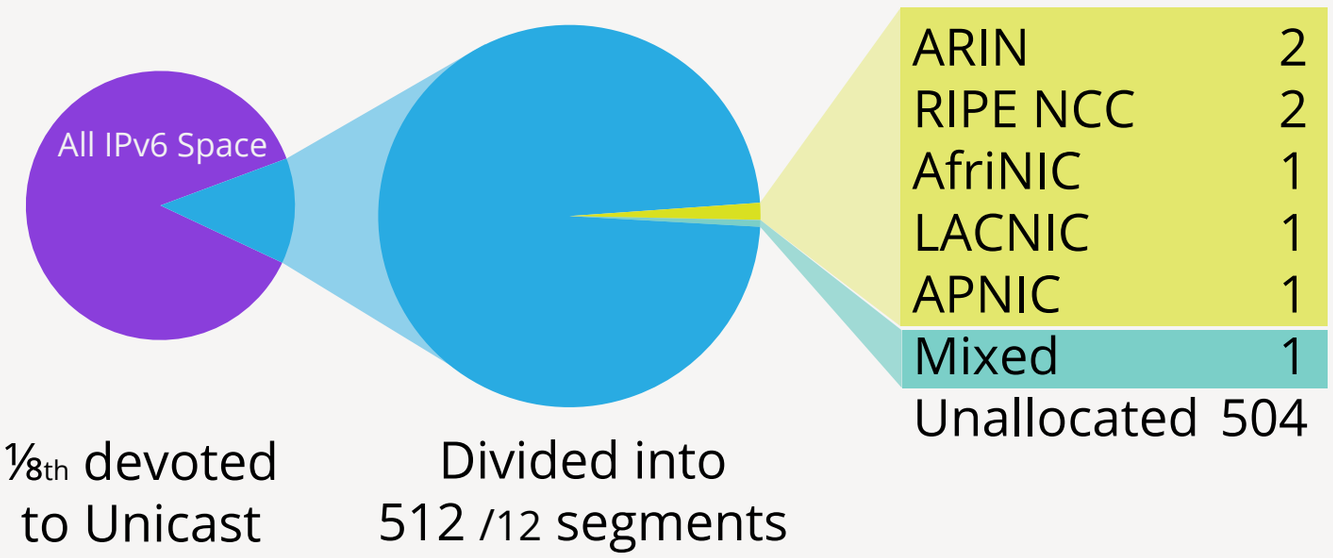
Prefix	Designation	Date	WHOIS	RDAP	Status [1]	Not
000/8	IANA - Local Identification	1981-09			RESERVED	
001/8	APNIC	2010-01	whois.apnic.net	https://rdap.apnic.net/	ALLOCATED	
002/8	RIPE NCC	2009-09	whois.ripe.net	https://rdap.db.ripe.net/	ALLOCATED	
003/8	Administered by ARIN	1994-05	whois.arin.net	https://rdap.arin.net/registry http://rdap.arin.net/registry	LEGACY	
004/8	Level 3 Parent, LLC	1992-12	whois.arin.net	https://rdap.arin.net/registry http://rdap.arin.net/registry	LEGACY	
005/8	RIPE NCC	2010-11	whois.ripe.net	https://rdap.db.ripe.net/	ALLOCATED	
006/8	Army Information Systems Center	1994-02	whois.arin.net	https://rdap.arin.net/registry http://rdap.arin.net/registry	LEGACY	
007/8	Administered by ARIN	1995-04	whois.arin.net	https://rdap.arin.net/registry http://rdap.arin.net/registry	LEGACY	
008/8	Administered by ARIN	1992-12	whois.arin.net	https://rdap.arin.net/registry http://rdap.arin.net/registry	LEGACY	
009/8	Administered by ARIN	1992-08	whois.arin.net	https://rdap.arin.net/registry http://rdap.arin.net/registry	LEGACY	
010/8	IANA - Private Use	1995-06			RESERVED	
011/8	DoD Intel Information Systems	1993-05	whois.arin.net	https://rdap.arin.net/registry http://rdap.arin.net/registry	LEGACY	
012/8	AT&T Bell Laboratories	1995-06	whois.arin.net	https://rdap.arin.net/registry http://rdap.arin.net/registry	LEGACY	
013/8	Administered by ARIN	1991-09	whois.arin.net	https://rdap.arin.net/registry http://rdap.arin.net/registry	LEGACY	
014/8	APNIC	2010-04	whois.apnic.net	https://rdap.apnic.net/	ALLOCATED	
015/8	Administered by ARIN	1994-07	whois.arin.net	https://rdap.arin.net/registry http://rdap.arin.net/registry	LEGACY	
016/8	Administered by ARIN	1994-11	whois.arin.net	https://rdap.arin.net/registry http://rdap.arin.net/registry	LEGACY	
017/8	Apple Computer Inc.	1992-07	whois.arin.net	https://rdap.arin.net/registry http://rdap.arin.net/registry	LEGACY	
018/8	Administered by ARIN	1994-01	whois.arin.net	https://rdap.arin.net/registry http://rdap.arin.net/registry	LEGACY	
019/8	Ford Motor Company	1995-05	whois.arin.net	https://rdap.arin.net/registry http://rdap.arin.net/registry	LEGACY	
020/8	Administered by ARIN	1994-10	whois.arin.net	https://rdap.arin.net/registry http://rdap.arin.net/registry	LEGACY	
021/8	DDN-RVN	1991-07	whois.arin.net	https://rdap.arin.net/registry http://rdap.arin.net/registry	LEGACY	

- Recovered pool allocated smaller blocks to RIRs from 2017—2019
- Space is now effectively exhausted



IPv6 Addresses

- 128-bit address space
- Minimal allocation to date of available space (≈1.2% of unicast, ≈0.1% of total)



Prefix	Designation	Date	WHOIS
2001:0000::/23	IANA	1999-07-01	whois.iana.o
2001:0200::/23	APNIC	1999-07-01	whois.apn
2001:0400::/23	ARIN	1999-07-01	whois.arin
2001:0600::/23	RIPE NCC	1999-07-01	whois.rip
2001:0800::/23	RIPE NCC	2002-05-02	whois.rip
2001:0a00::/23	RIPE NCC	2002-11-02	whois.rip
2001:0c00::/23	APNIC	2002-05-02	whois.a
2001:0e00::/23	APNIC	2003-01-01	whois.a
2001:1200::/23	LACNIC	2002-11-01	whois.l
2001:1400::/23	RIPE NCC	2003-02-01	whois.
2001:1600::/23	RIPE NCC	2003-07-01	whois
2001:1800::/23	ARIN	2003-04-01	whois
2001:1a00::/23	RIPE NCC	2004-01-01	whois
2001:1c00::/22	RIPE NCC	2004-05-04	whoi
2001:2000::/20	RIPE NCC	2004-05-04	who

https://iana.org/assignments/ipv6-unicast-address-assignments

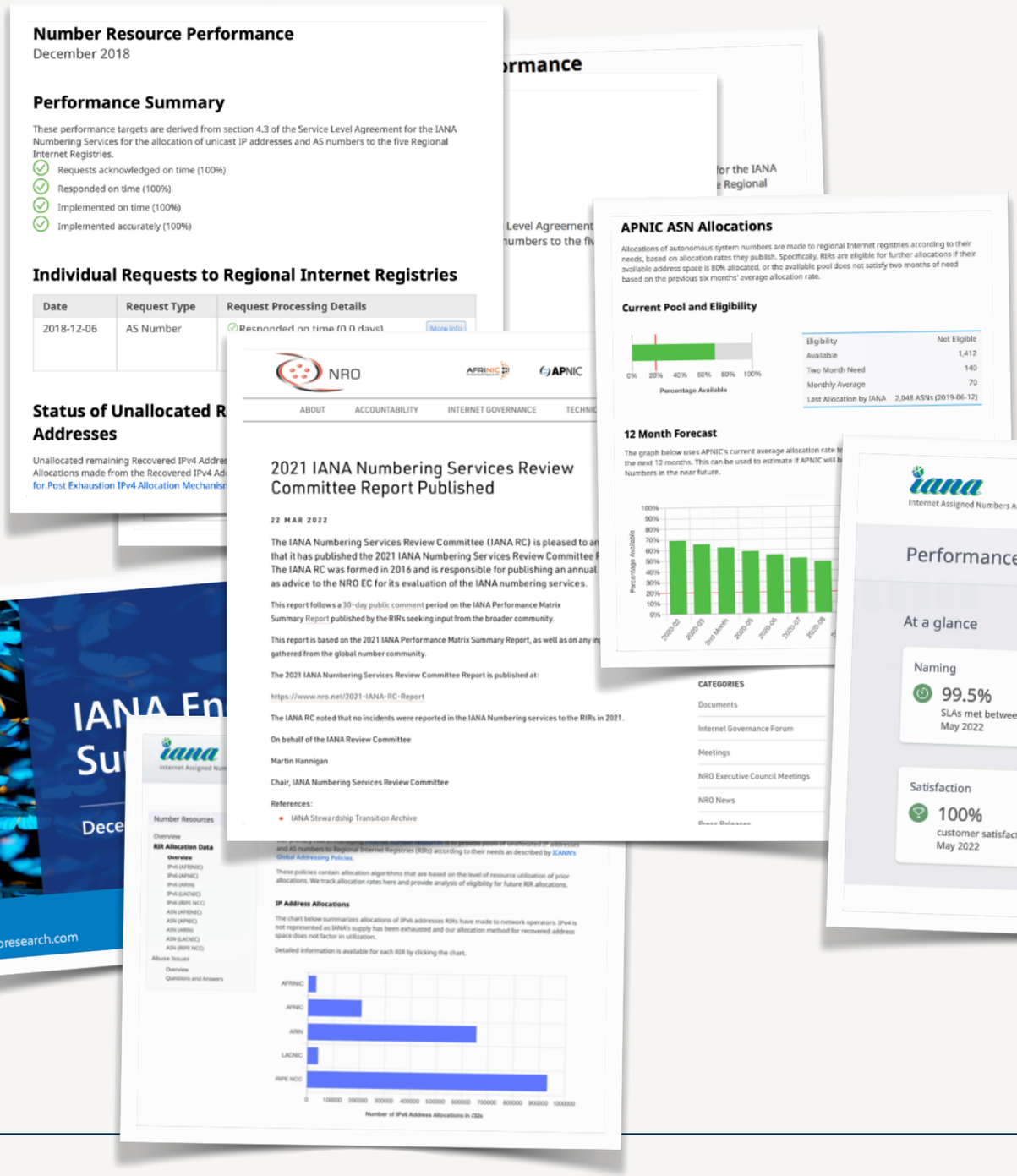
AS Numbers

- Identifiers that aggregate IP address collections for whole networks, simplifies routing
- 32-bit address space (≈4 billion addresses)
  - Originally a 16-bit (“2-byte”) address space (65,536 addresses)
  - Expanded to 32-bit in 2007 by RFC 4893
- All two-byte AS numbers have been allocated or reserved
  - Last allocation was made 2021
- Approximately 98% remains unallocated

https://iana.org/assignments/as-numbers

Number	Description	WHOIS	RDAP
0-65535	See Sub-registry 16-bit AS numbers		
65536-65551	Reserved for use in documentation and sample code		
65552-131071	Reserved		
131072-132095	Assigned by APNIC	whois.apnic.net	https:
132096-133119	Assigned by APNIC	whois.apnic.net	https:
133120-133631	Assigned by APNIC	whois.apnic.net	https
133632-134556	Assigned by APNIC	whois.apnic.net	https
134557-135580	Assigned by APNIC	whois.apnic.net	https
135581-136505	Assigned by APNIC	whois.apnic.net	https
136506-137529	Assigned by APNIC	whois.apnic.net	https
137530-138553	Assigned by APNIC	whois.apnic.net	https
138554-139577	Assigned by APNIC		
139578-196607	Unallocated	whois.ripe.net	http
196608-197631	Assigned by RIPE NCC	whois.ripe.net	http
	Assigned by RIPE NCC		

Accountability

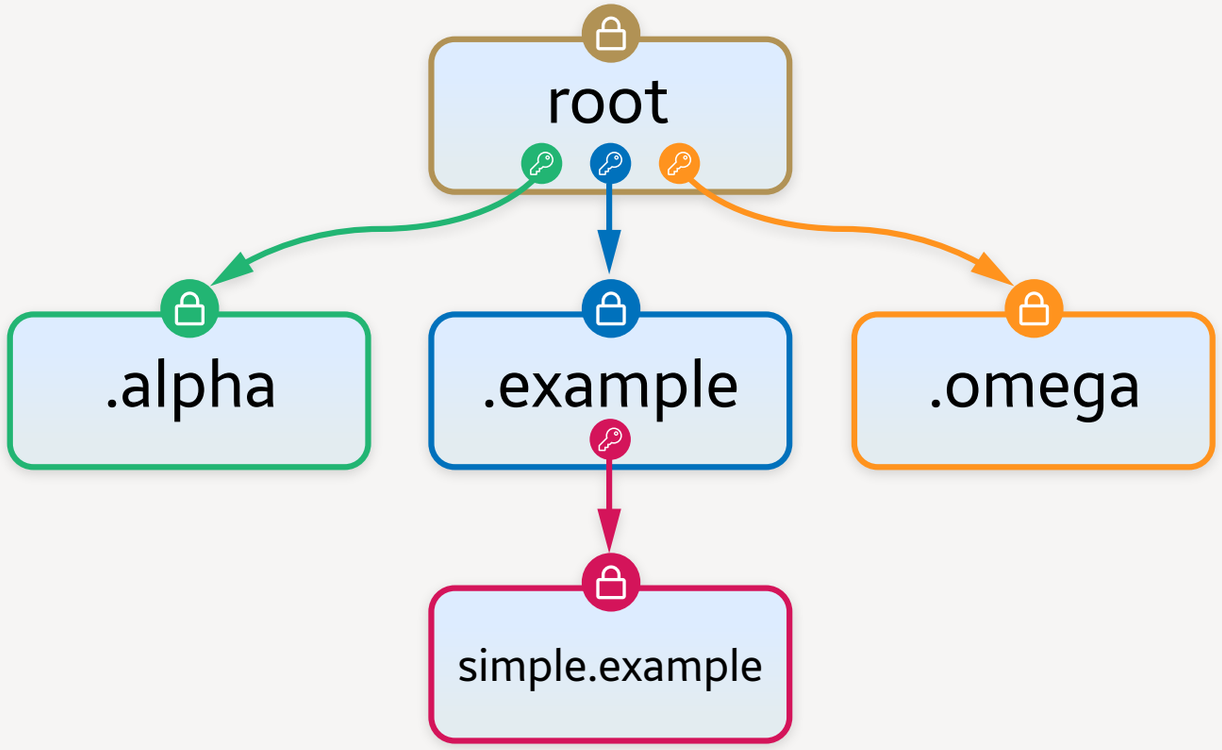


- Performance reporting against SLAs
- Post-transaction surveys
- Annual surveys
- Annual community reviews

https://iana.org/performance

DNS Trust Anchor

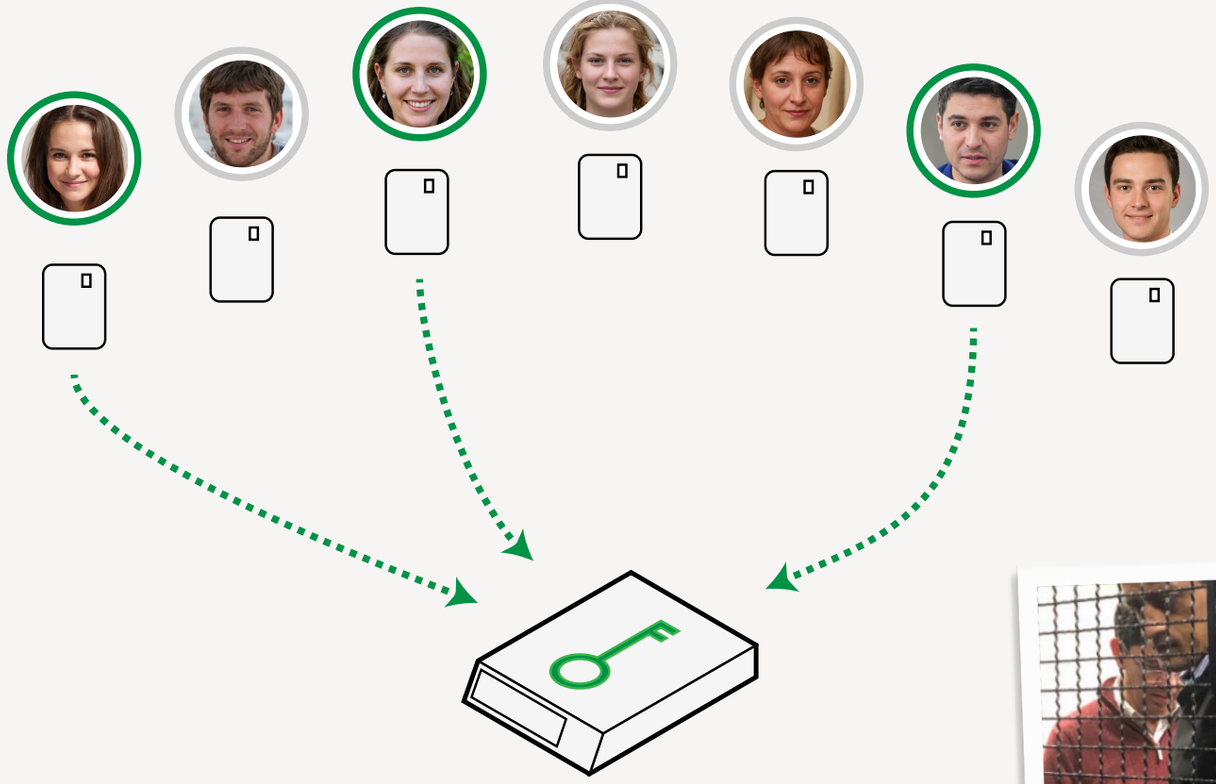
- Security for the DNS (DNSSEC) is a hierarchical system of public key cryptography that matches the hierarchical delegation of the DNS itself.
- The apex key is the **Root Zone Key Signing Key (KSK)**, which serves as the singular trust anchor for the system.
- We manage the key in a highly transparent manner, with public key signing ceremonies and an open design model.

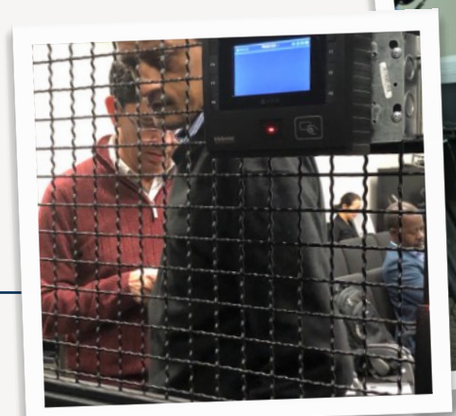


Trusted Community Representatives

- Community members are a key part of how we protect the key and build trust.
- Participate in and oversee ceremonies
- Maintain credentials required to activate the key.
- We’re looking for volunteers to enhance the diversity of our TCRs, to apply

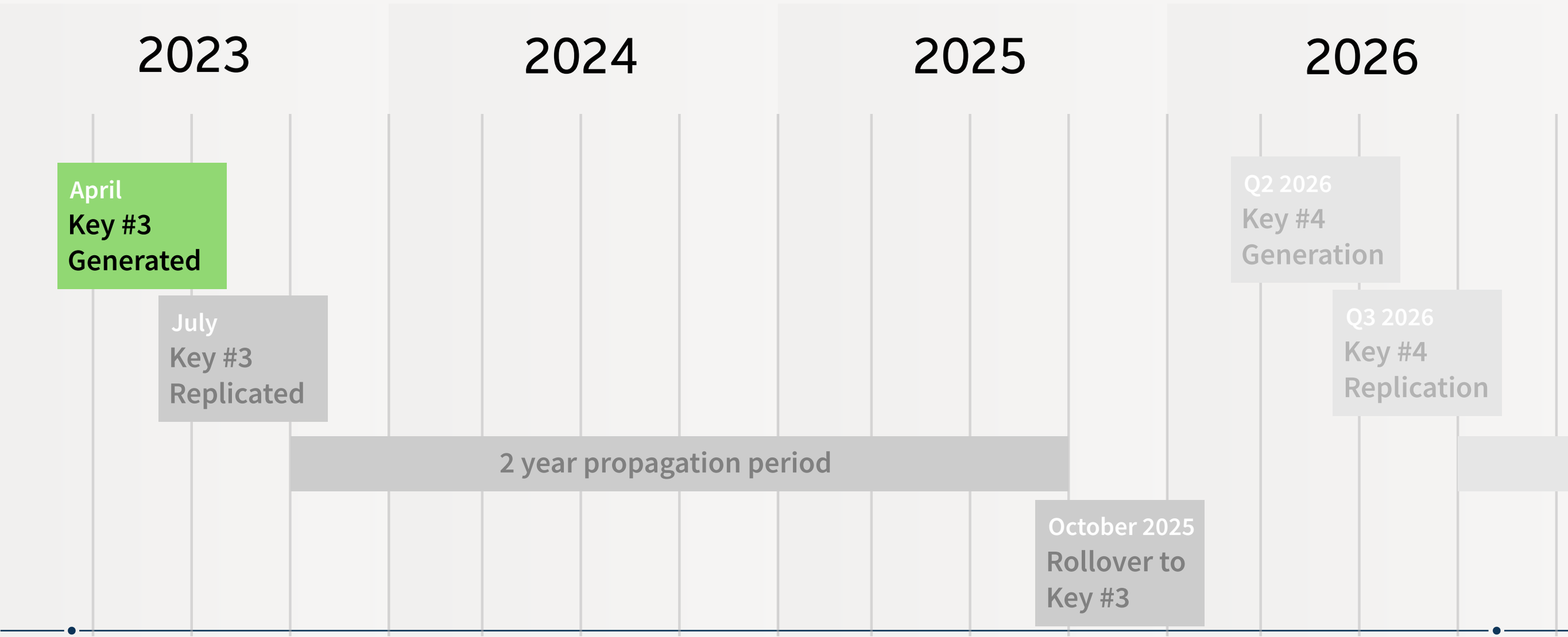
https://iana.org/tcr





Key rollover

- Changing the Root Zone KSK is a highly orchestrated event
- Requires propagation of the new trusted public key to all validators
  - Through automatic update mechanisms, vendor updates, and the like
- First rollover in 2018, readying for the second rollover.



Thank you!

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