



V4 Escrow

We recycle IPv4 and promote IPv6!

IPv4 Transfers

Recognized IPv4 Broker in:



Elvis Daniel Velea
Chief Executive Officer

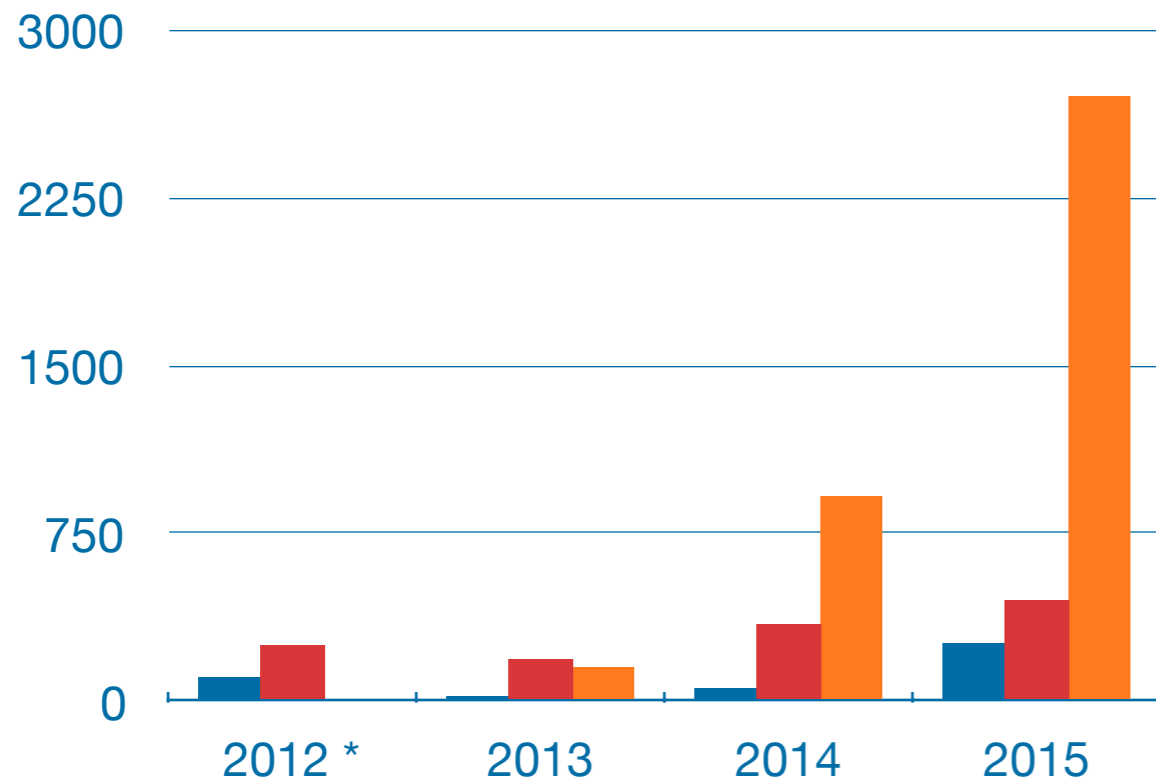
Menog16 - 23 March 2015

Transfer Statistics

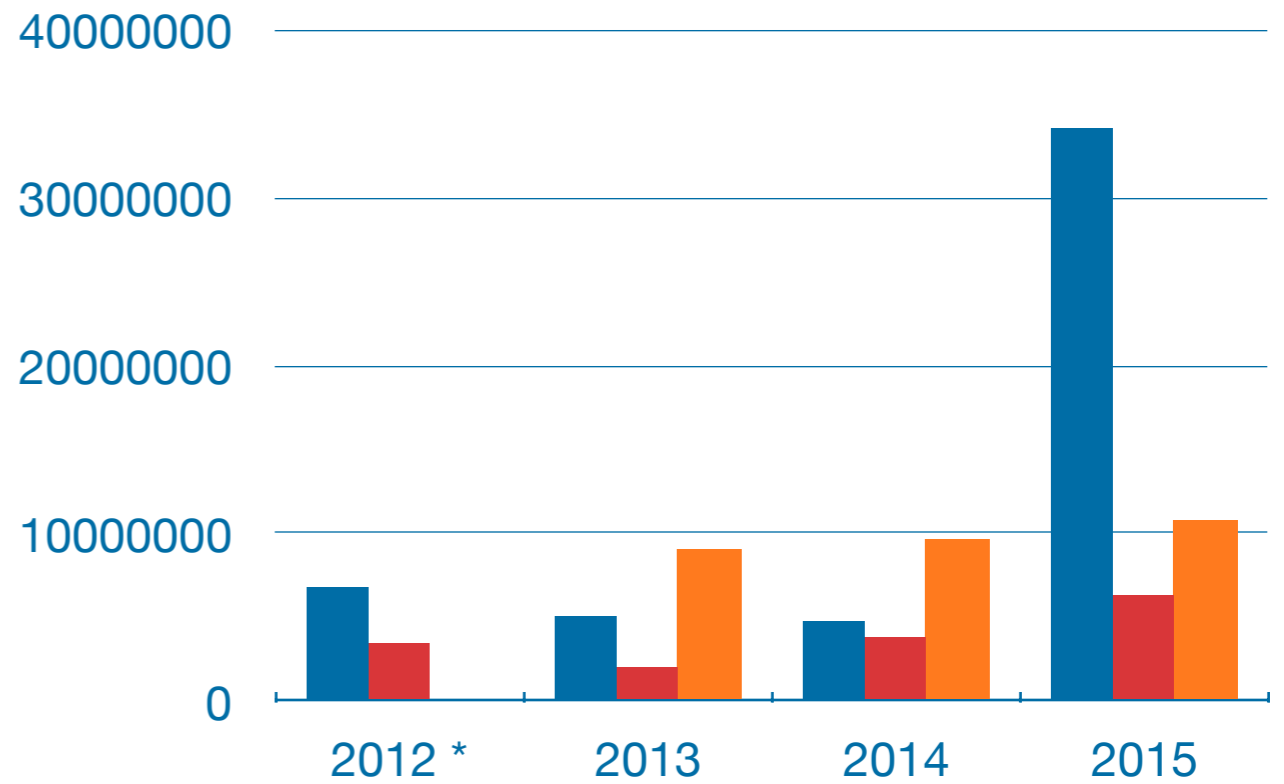
Receiving RIR	2012 and before	2013	2014	2015	2016 * (Jan + Feb)
ARIN # of IP blocks	102	22	58	261	107
APNIC # of IP blocks	251	189	343	445	257
RIPE NCC # of IP blocks	9	154	920	2709	272
Total # of IP blocks	362	365	1321	3415	634
ARIN # of IPs	6,819,584	5,128,448	4,745,472	34,144,000	654,336
APNIC # of IPs	3,435,008	1,962,240	3,851,264	6,311,168	1,202,176
RIPE NCC # of IPs	65,536	1,977,344	9,645,568	10,828,544	898,560
Total # of IPs	10,320,128	9,068,032	18,242,304	51,283,712	2,755,072

Transfer Statistics

Number of Transfers



Number of IP Addresses



■ ARIN
■ APNIC
■ RIPE NCC

■ ARIN
■ APNIC
■ RIPE NCC

* 2012 stats show transfers before and during 2012

Transfer Statistics - APNIC

- Policies for transfers:
 - Intra-RIR policy since February 2010 - First IPv4 transfer in Nov. 2010
 - compatible Inter-RIR transfer policy with ARIN since August 2011 and with RIPE NCC since October 2015
- Runout on 15 April 2011
- IP transfers within APNIC
 - number of transfers and total number of IPs increased with about 50% every year
- Inter-RIR Transfers from ARIN
 - 6 in 2012, 17 in 2013, 94 in 2014, 71 in 2015, 9 in 2016 *
- Inter-RIR Transfers from RIPE
 - none before March 2016

Transfer Statistics - RIPE NCC

- Policies for transfers:
 - Intra-RIR policy since Dec 2008 - First IPv4 Transfer in Oct. 2012
 - compatible Inter-RIR transfer policy with ARIN and APNIC since October 2015
- Run-out on 14 September 2012
- Number of transfers increased since IPv4 policy clean-up in February 2014
- Number of LIRs increased with 50% since runout
- 403 **PI** transfers since November 2014
- Inter-RIR Transfers from ARIN
 - 11 in 2015, 2 in 2016 *
- 4 Inter-RIR Transfers from APNIC in 2016 *

Transfer Statistics - ARIN

- Policies for transfers:
 - Intra-RIR policy since June 2009 - First IPv4 Transfer in Oct. 2009
 - compatible Inter-RIR transfer policy with APNIC since July 2012 and with RIPE NCC since October 2015
- Run-out on 24 September 2015
- IP transfers within ARIN
 - number of transfers and total number of IPs increased in 2015 and continues to grow and are surging since run-out
- Inter-RIR Transfers from RIPE
 - one in 2016 *
- Inter-RIR Transfers from APNIC
 - 3 in 2015, 2 in 2016 *

V4Escrow's predictions are accurate

- Our predictions do not include Legacy transfers in the RIPE Region as these are not made public.
- V4Escrow was asked during Menog14 to make a prediction on the number of IPs transferred in 2014. We estimated a /8 will be transferred and were **98%** right.
- During Menog15 we also predicted that 4 /8s will be transferred globally in 2015. According to the publicly available stats, 3.06 /8s were transferred and recorded in the RIR stats making our prediction 76% accurate.
- Some Brokers will assist customers to close futures contracts that are not reflected in the RIR Databases or stats. V4Escrow provides complete services to its customers but avoids future contracts.
 - Some brokers estimated that 30% of their brokered transfers are NOT recorded with the RIRs
 - mostly happening in ARIN where needs based policies still exist even after run-out
 - Geoff Huston showed in a presentation at APNIC41 that 14M IP addresses have, apparently, been transferred but are not recorded in the RIR databases.
- Considering the 3.05 /8s transferred and recorded and the 14M additional IP addresses seen in the routing table, we can say that the 4 /8s prediction was also **98%** correct.
- Based on previous predictions which were spot-on, we can now predict that the number of IPs transferred in 2016 will decrease to **2.5 /8s**.

Lessons learned

- Contact Geo-IP providers once you transfer an IP block
 - your customers will be seen in the country of the transferor for the first few months.
- Ask for a blacklist report on the IP block or check major blacklisting providers.
- If you are the Buyer - request the seller to forward you the abuse reports for the IP addresses transferred to you
 - from our experience, the Seller will continue to receive abuse reports for at least 6-12 months for the IP addresses transferred because abuse reporters do not update their databases and continue to send the reports to the 'old' abuse contact
- Start routing immediately, hijacks do happen very often
- If you do not transfer the IP block through a broker, make sure the person that you talk to has corporate authorization to transfer to you. Ask for PoA (Power of Attorney).
- Have a price in mind before you contact a Broker or the other party for the transfer.

Pricing - observed vs estimated

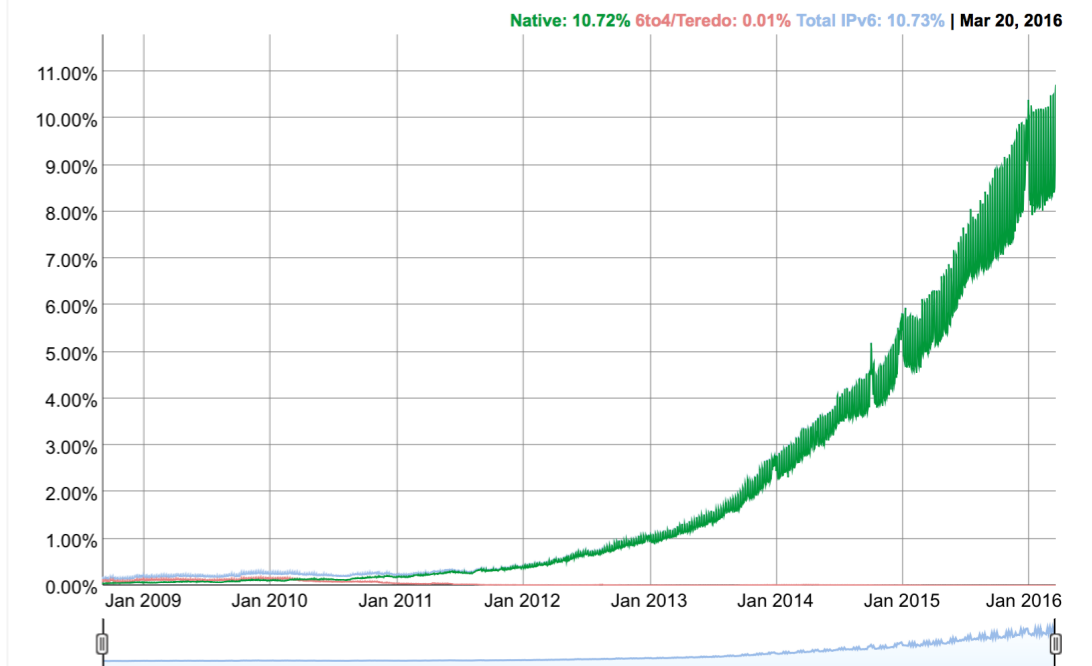
- ARIN runout affected pricing - prices started to go up
- RIPE Inter-RIR transfer policy caused prices to harmonize between regions
- Price trends have reversed, prices have increased since ARIN Runout
 - minimum price observed was in 2013-2014 - \$7-\$9/IP
 - a lot of IPv4 available on the market
 - current prices have harmonized at \$10-\$12/IP
 - only a few large blocks (/16 or larger) available on the market
 - many transactions (below /17) observed at \$12-\$14/IP
 - several small transactions at even \$16/IP
- Large IP blocks (/8s) added to the market may draw prices down for a few months
- Maximum price still to be observed but we estimate it to grow above \$25/IP in 2+ years

IPv6

- as per Google site
 - measured since 2008
 - virtually 0 before 2012
 - 100% growth in 2012 up to 1.1%
 - 150% growth in 2013 up to 2.8%
 - 100% growth in 2014 up to 5.6%
 - 95% growth in 2015 up to 10.4%
 - now at 10.7% worldwide

IPv6 Adoption

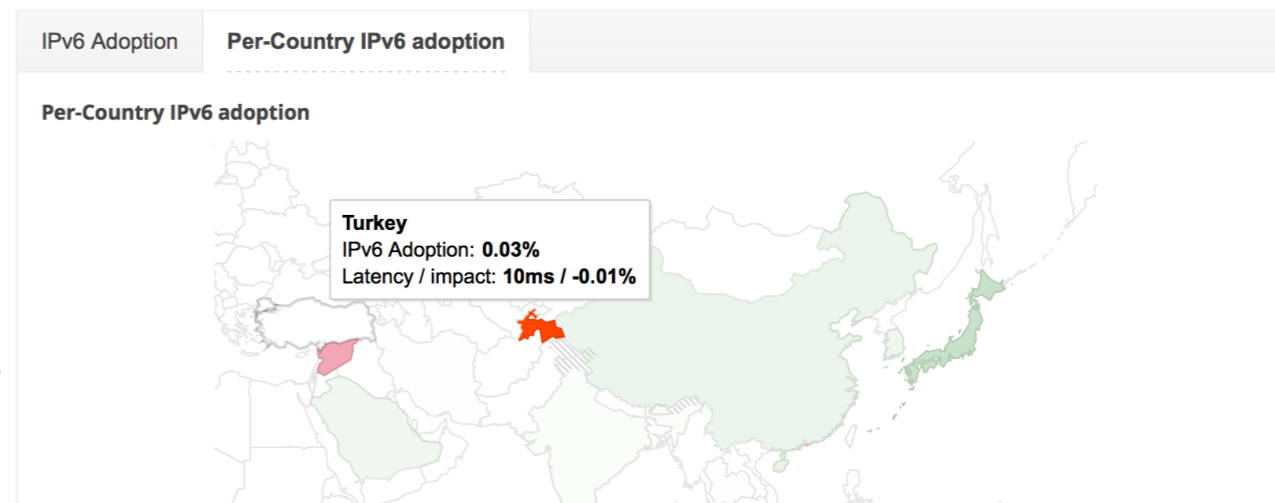
We are continuously measuring the availability of IPv6 connectivity among Google users. The graph shows the percentage of users that access Google over IPv6.



IPv6 in Turkey

- IPv6 adoption in Turkey
 - only at 0.03% according to Google
 - only 3% with 4 * RIPLEness
 - compared to 21% in RIPE
 - only 4 LIRs in Turkey have 5 * RIPLEness

Google collects statistics about IPv6 adoption in the Internet on an ongoing basis. We hope that publishing this information will help Internet providers, website owners, and policy makers as the industry rolls out IPv6.



Total number of LIRs registered to Turkey: 300

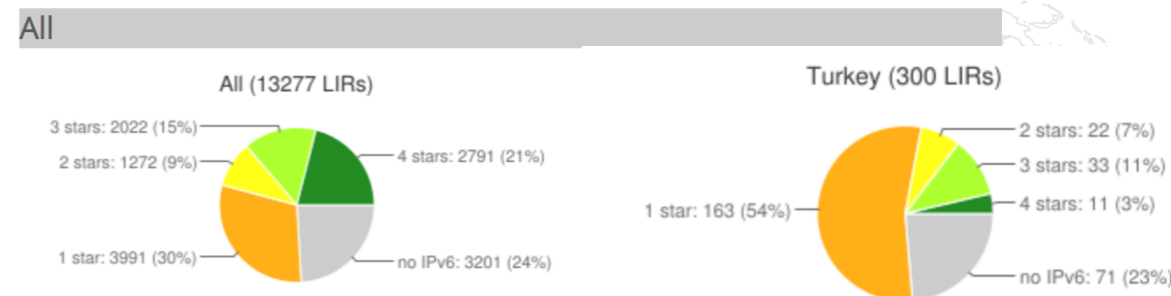
LIRs qualifying for the fifth star



Listing of LIRs qualifying for *all* five stars

Access (last 6 months)	Access (last month)	Content LIR
88.2 %		30.8 % National Academic Network and Information Center
		100.0 % National Library of Turkey
		95.5 % Turkcell Iletisim Hizmetleri A.S
		VeriTeknik Bilisim Ltd.

IPv6 RIPLEness country pie charts (2016-03-10)



- low IPv6 adoption = higher IPv4 prices in a few years

Questions ?



v4Escrow

IPV4 RESTARTS HERE!

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