

News from the HEPiX IPv6 Working Group

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IPv4 address exhaustion

<http://www.potaroo.net/tools/ipv4/>

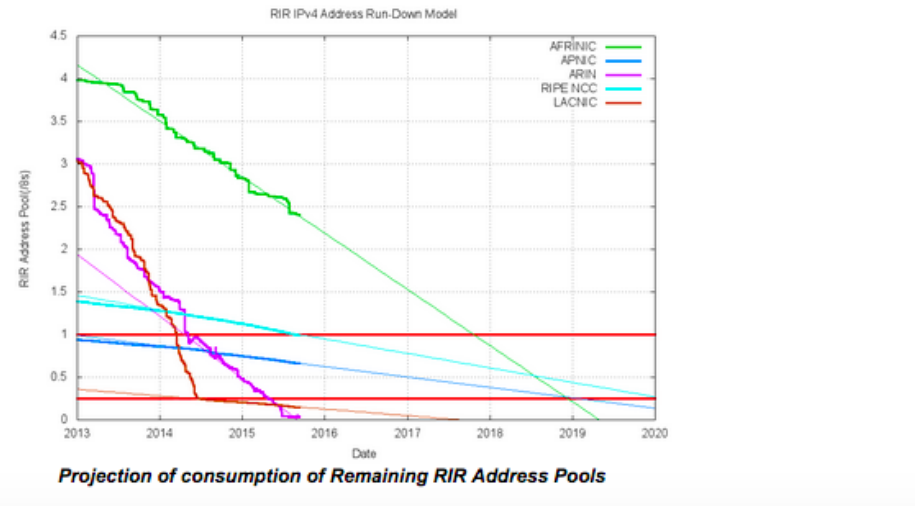
IPv4 Address Report

This report generated at 10-Sep-2015 08:25 UTC.

IANA Unallocated Address Pool Exhaustion:
03-Feb-2011

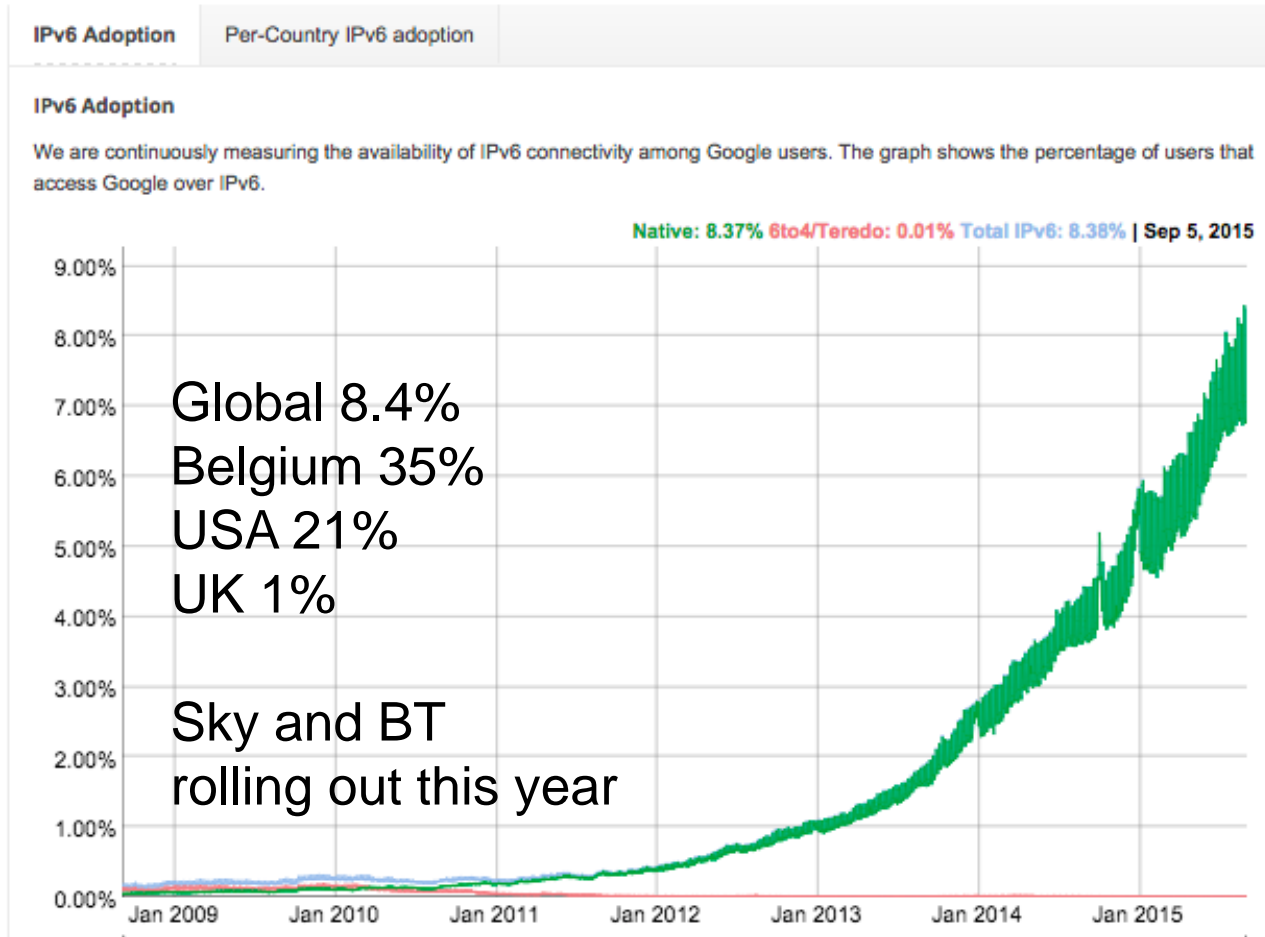
Projected RIR Address Pool Exhaustion Dates:

RIR	Projected Exhaustion Date	Remaining Addresses in RIR Pool (/8s)
APNIC:	19-Apr-2011 (actual)	0.6624
RIPE NCC:	14-Sep-2012 (actual)	0.9921
LACNIC:	10-Jun-2014 (actual)	0.1442
ARIN:	12-Sep-2015	0.0012
AFRINIC:	19-May-2019	2.4047



Google IPv6 stats

<https://www.google.com/intl/en/ipv6/statistics.html>



News from the group

- May 2015
 - INFN IPv6 routing problems
 - LHCb IPv6 DIRAC problems (external library)
 - CHEP2015 paper submission
 - dCache FTS3 testbed – several problem sites
 - KIT FTS3 problems
 - Starting on XRootD testing
 - Discussions on production testing
 - Nordic dual-stack soon, PIC in Sep

News (2)

- June 2015
 - CNAF Tier1 IPv6 perfSONAR
 - ATLAS: Oxford and Glasgow receiving IPv6 transfers
 - LHCOPN/IPv6 making progress in USA
 - New PIC IPv6 firewall
 - eduROAM at DESY now IPv6
 - FTS at KIT – gsiftp not working on IPv6
 - Could be related to recent update gfal2
 - Nordic – one system remains to move dual-stack
 - National IPv6 day – 10k to 4M devices overnight
 - QMUL problems with dual-stack SAM - SAM ATLAS now IPv4-only
 - QMUL have dual-stack StoRM SEs

News (3)

- July 2015
 - PIC connected IPv6 on LHCONE
 - QMUL – dual-stack CEs, but IPv4 pilot job failures
 - KIT – FTS testbed fixed – was a globus-ftp-client problem
 - ALICE updated to XRootD 4.1.x
 - Some problems with 3rd part IPv6 data transfers
 - QMUL dual-stack perfSONAR. ATLAS IPv4 pilot jobs failing (to dual-stack CREAM CE)
 - RAL Tier 1 making progress
 - LHCb library problem fixed
 - IPv6-capable DIRAC does not break IPv4
 - Tony Wildish leaving CMS – Ulf Tigerstedt will take over testbed

2015 Deployment plan

- LHCOPN/LHCONE IPv6 routing (by August)
- perfSONAR dual-stack monitoring
 - ATLAS T1 and T2D by August
- Gradually deploy production dual-stack data services
 - When LHCOPN/LHCONE peering ready
 - When testing proves functionality and performance
- Important central services to dual-stack
 - Including dual-stack SAM
- Currently 2.5% of WLCG services are dual-stack
- Need more work on guidance, e.g. IPv6 security

IPv6 security

- Working on IPv6 & operational security
 - Working group, EGI CSIRT, CERN security team
- Provide guidance/best practice
 - To site security/networking teams
 - To sys admins
- Will discuss more at next week's IPv6 F2F meeting



IPV6 Network Monitoring

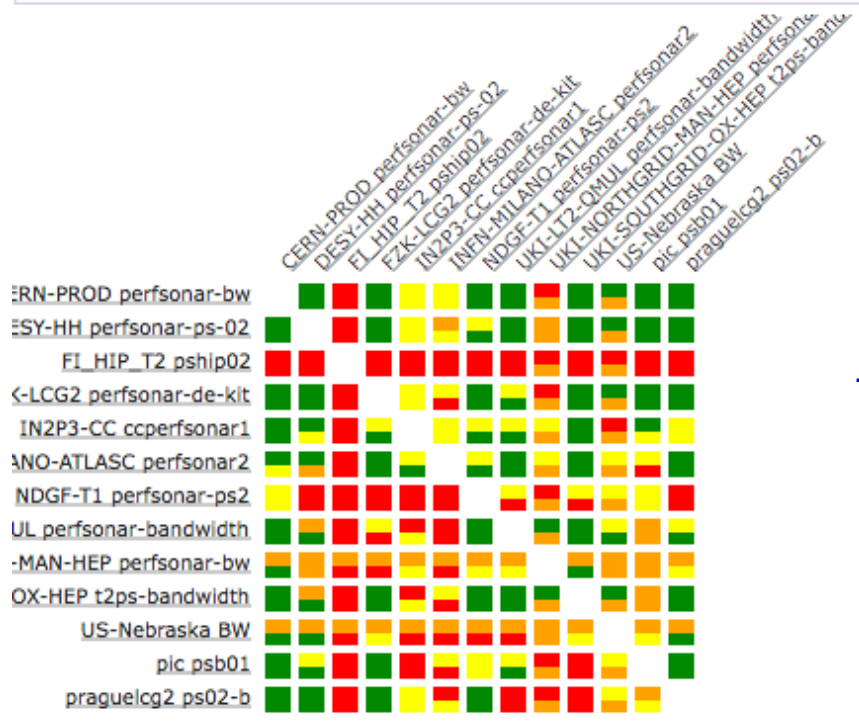
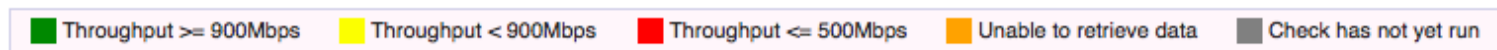
perfSONAR monitoring

- As we turn on production dual-stack
 - We need to collect IPv6 monitoring data
- Since perfSONAR V3.4 Dual-stack is recommended
 - Add AAAA record to DNS
 - If both ends are dual-stack
 - IPv4 & IPv6 tests will both be run

perfSONAR dashboard

Dual-Stack Mesh Config Dashboard

Dual-Stack Mesh Config - IPv4 Bandwidth Test



<http://maddash.aglt2.org/>

Dual-Stack Mesh Dashboard

LHCOPN/LHCONE & IPv6

- To get same network performance
 - Need IPv6 data to take the same route as IPv4
- **LHCOPN** sites should be peering with IPv6
- CERN and 5 Tier 1s completed
 - More to come (including RAL)
- **LHCONE** – IPv6 peering at a few places

Links

- HEPiX IPv6 web

<http://hepixonweb.cern.ch>

- HEPiX IPv6 wiki

<https://w3.hepixon.org/ipv6-bis/>

- Working group meetings

<http://indico.cern.ch/categoryDisplay.py?categId=3538>

- WLCG Operations IPv6 Task Force

<http://hepixonweb.cern.ch/content/wlcg-ipv6-task-force-0>

- Paper published in proceedings of CHEP2013
 - CHEP2015 coming soon



Questions?