

# IPv6 and the Role of RIRs

RIGF.Asia  
Hong Kong, June 2010

# Internet fundamentals

- Open network, open standards
  - Developed within IETF system (RFC series)
  - TCP/IP, DNS, DHCP, HTTP, IPSEC, etc etc
  - “Dumb network” – global p2p datagram service
- “IP over Everything”
  - Layered networking model (a la OSI)
  - Relying on ITU and IEEE standards
  - Serial line, Modem, Ethernet, ISDN, xDSL, cable/fibre, MPLS, 802.11x, Mobile 2G/3G...
- Platform for competition and innovation
  - Great benefits to consumers



# The “Protocol Hourglass”

*Applications*

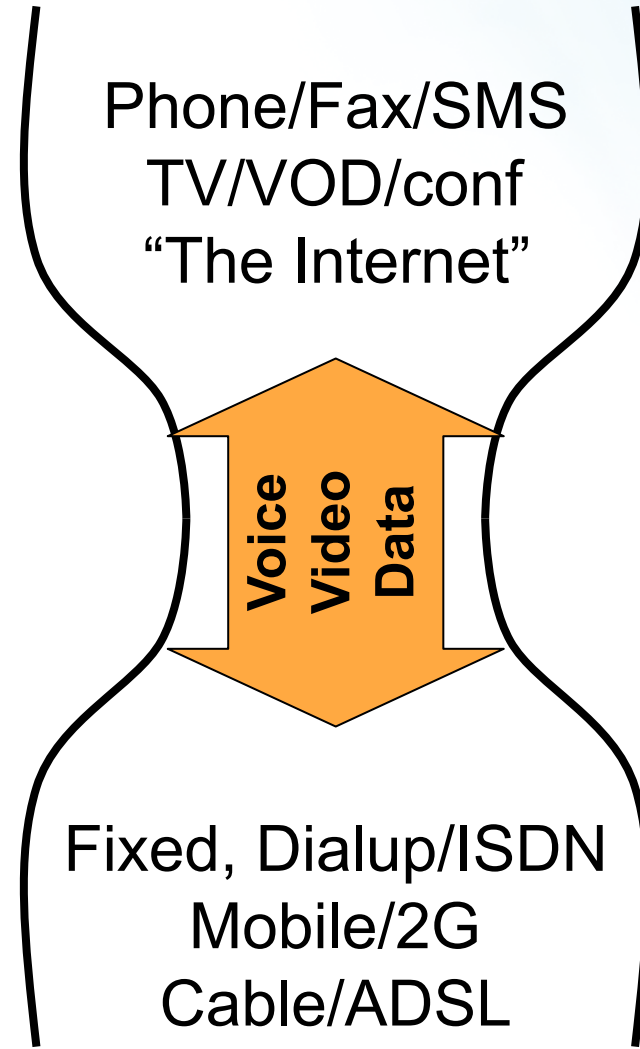
Phone/Fax/SMS  
TV/VOD/conf  
“The Internet”

*Network*

Voice  
Video  
Data

*Infrastructure*

Fixed, Dialup/ISDN  
Mobile/2G  
Cable/ADSL



# The Hourglass – Tomorrow

*Applications*

Voice, email, IM  
Video, TV, conf  
WWW+++

*Network*

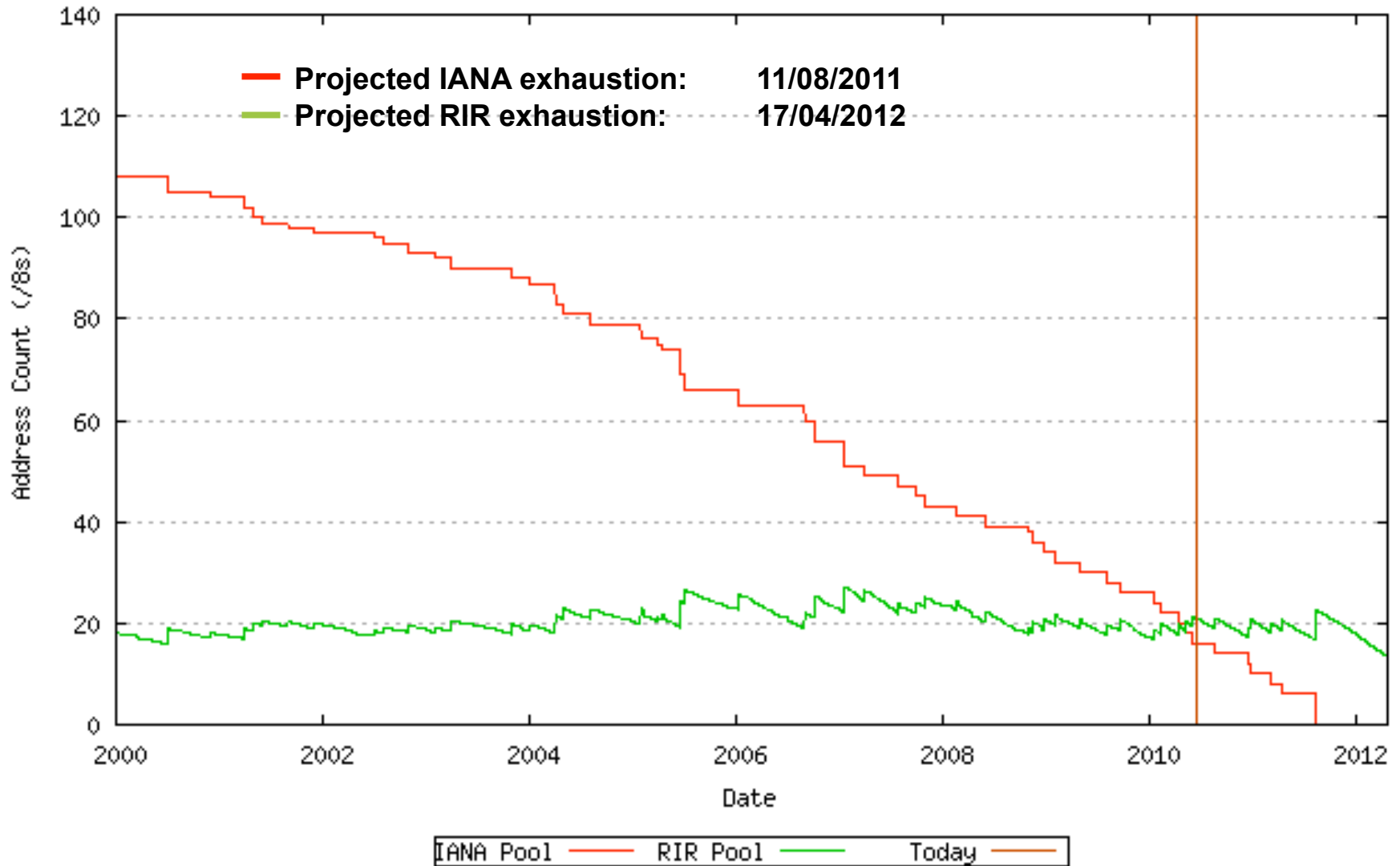
IP

*Infrastructure*

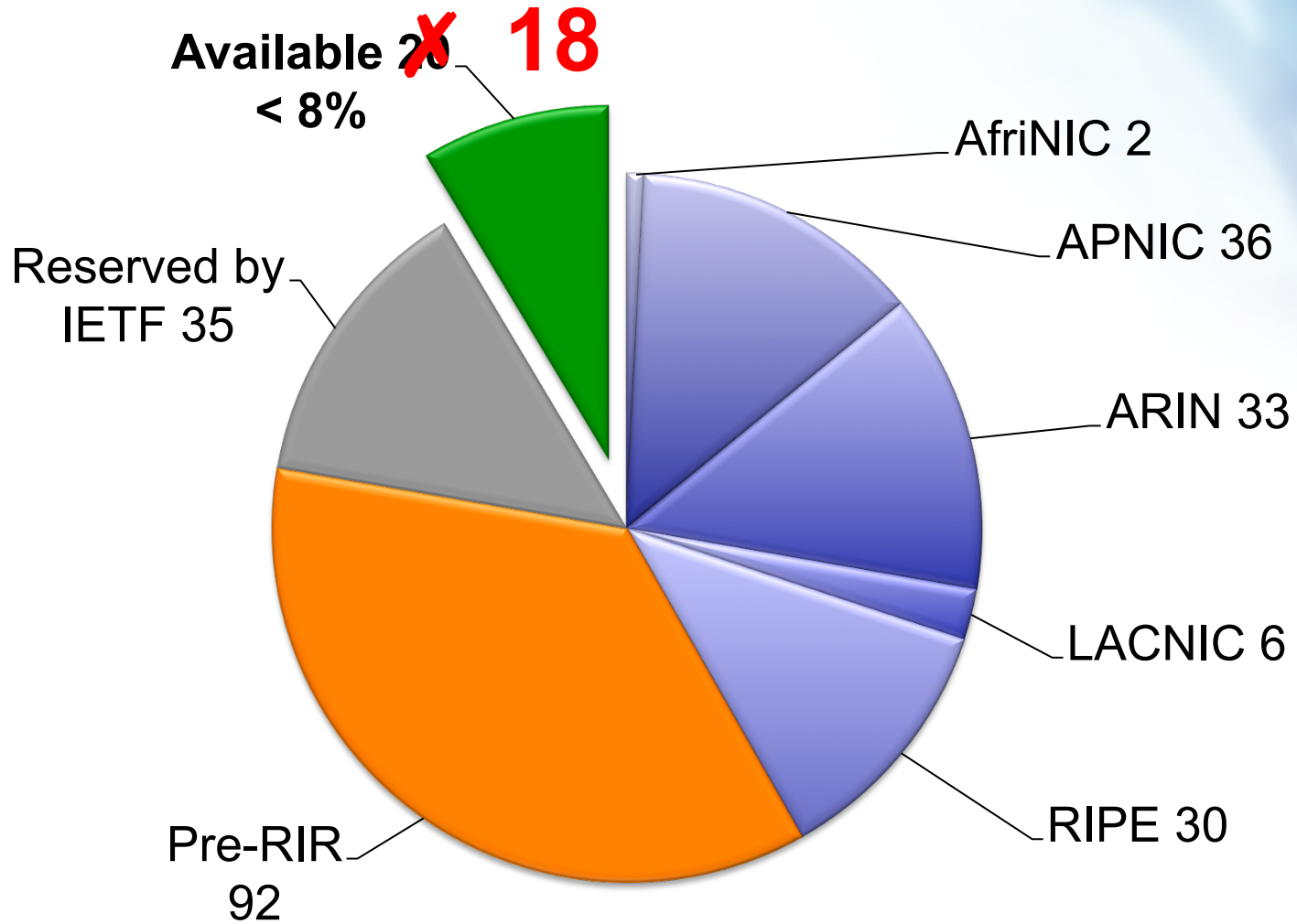
802.11\*/WiMax  
Mobile/3G  
Cable/\*DSL  
FTTH, ETTH



# Projected IPv4 Lifetime



# IPv4 Address Global Distribution



May 2010

# IPv4 Consumption – Mitigation

- Many approaches discussed in regional meetings
  - Policy and procedural measures adopted
  - Some policies regional, some global
- Hard landing: The “do nothing” approach
  - Too much risk for serious consideration
- Soft landing: measures to extend lifetime
  - Rationing (eg /8 last block)
  - Stricter justification requirements
  - Reclaiming unused IPv4 addresses
  - Transfer policies

# Transition to IPv6

- IPv4 address exhaustion is inevitable
  - August 2011: IANA allocates the last /8
  - August 2012: APNIC is the first RIR to exhaust its IPv4 address pool
- IPv6 should be inevitable
  - The only solution to IPv4 exhaustion
  - Protocol is 10 years old
  - Under a news spotlight for at least 18 months
- The transition...
  - Requires all stakeholders to act, but differently
  - Will take 10+ years to complete



# IPv6 Address Management

- RIRs continue providing equitable services to the Internet community
  - A stable and proven structure for 20 years
- Address management is not the issue in IPv6 deployment
  - Policies are stable and unrelated to deployment
- All efforts should go to IPv6 deployment
  - In the core (ISPs, vendors)
  - At the edges (users, software developers)
  - Governments: Policies and procurement

# IPv6 is Here!

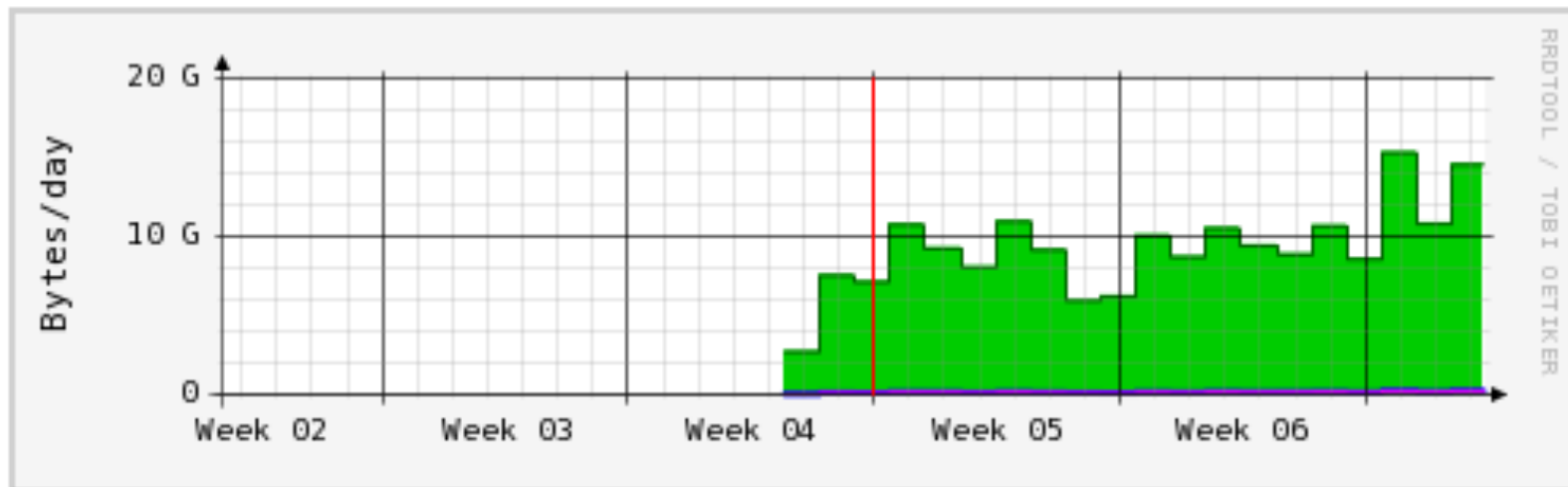
- IPv6 is no longer experimental
- IPv6 is now in commercial use
- Signification acceleration in deployment over past year
- The main questions have answers...

# Chicken or Egg?

“Google has quietly turned on IPv6 support for its YouTube video streaming Web site, sending a spike of IPv6 traffic across the Internet...”

– 1 Feb 2010 Networkworld

- Monash University, Melbourne, Australia:



**What's the Killer App for IPv6?**

***The Internet !***



## Sometime in 2012...

- ISPs will need addresses for new network infrastructure
  - and will receive only IPv6
- End users will start receiving IPv6 Internet services
  - With or without private IPv4 addresses
- Enterprises and businesses will get IPv6 for their new networks
  - “Customer NAT” will apply to IPv4
- All Internet users will be affected
- What will you need to do?

# RIRs and Internet Governance

- *Open, bottom up, neutral, non-profit, multistakeholder organisations*
  - Predating ICANN by many years
  - Supporting the ICANN model, and ICANN itself
  - Satisfied with IANA arrangements at present
- Participating in IG forums and discussions
  - RIRs individually and collectively (as NRO)
  - WSIS, WGIG (some ECOSOC accredited)
  - ITU-T and ITU-D (some sector members)
  - Many regional activities and forums
  - IGF and MAG: long record of participation and financial support – *we support continuation.*

# Historical Note

- What is a “Critical Internet Resource?”
  - Informal survey, November 2007

<http://archive.apnic.net/news/docs/cir-pwilson-20071112.pdf>

# Thank you

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