IPv6: Internet Addresses Forever

Internet Governance Forum

16 November 2009

Overview

- Motivation for IPv6
- IP Address Status
- IP Address management
- The Next Step: IPv6
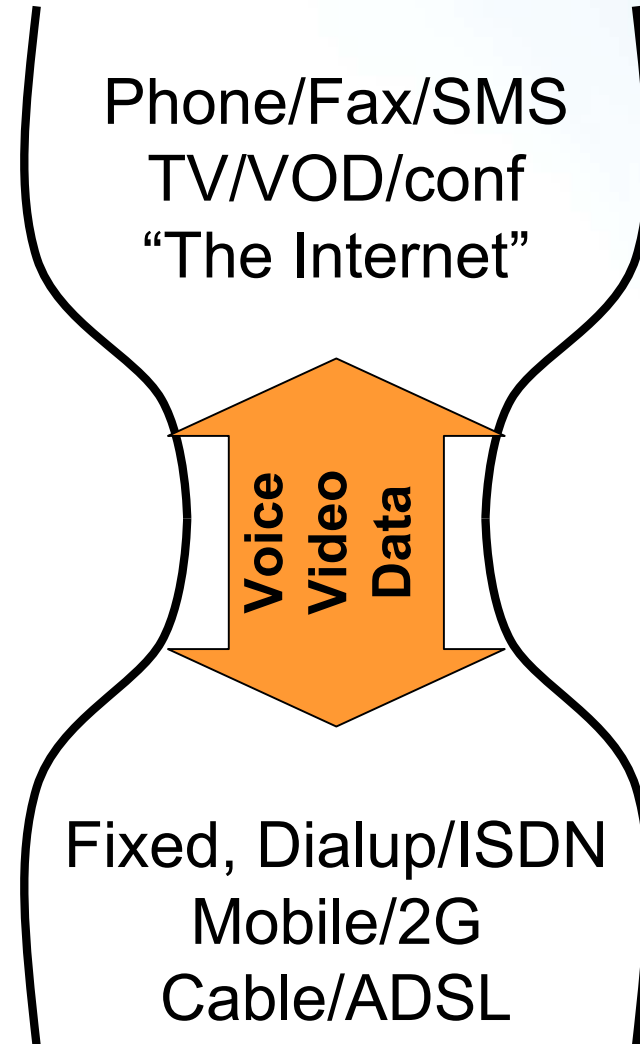- Conclusions

The "Narrow Waist"

Applications

Phone/Fax/SMS
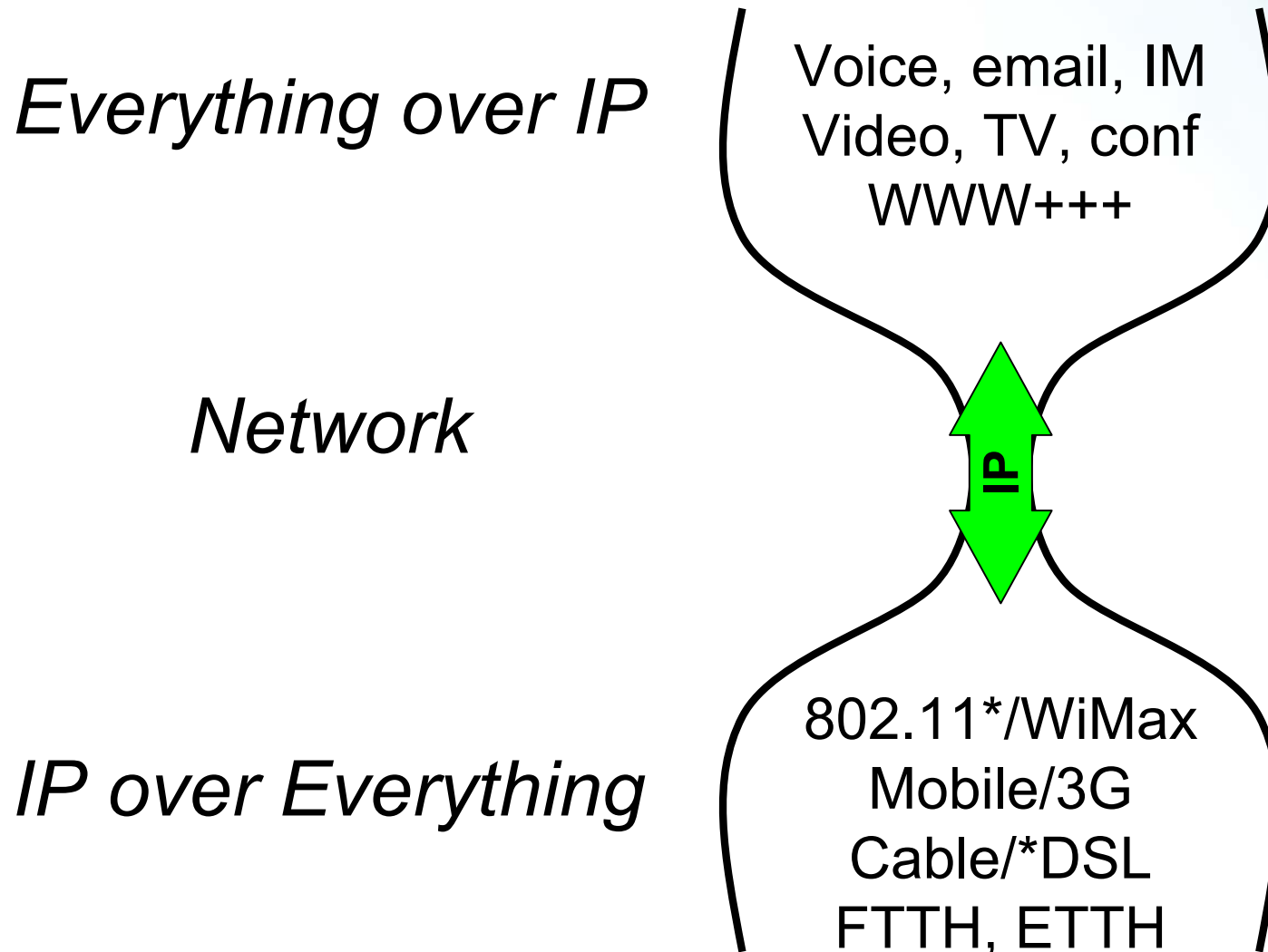TV/VOD/conf
"The Internet"
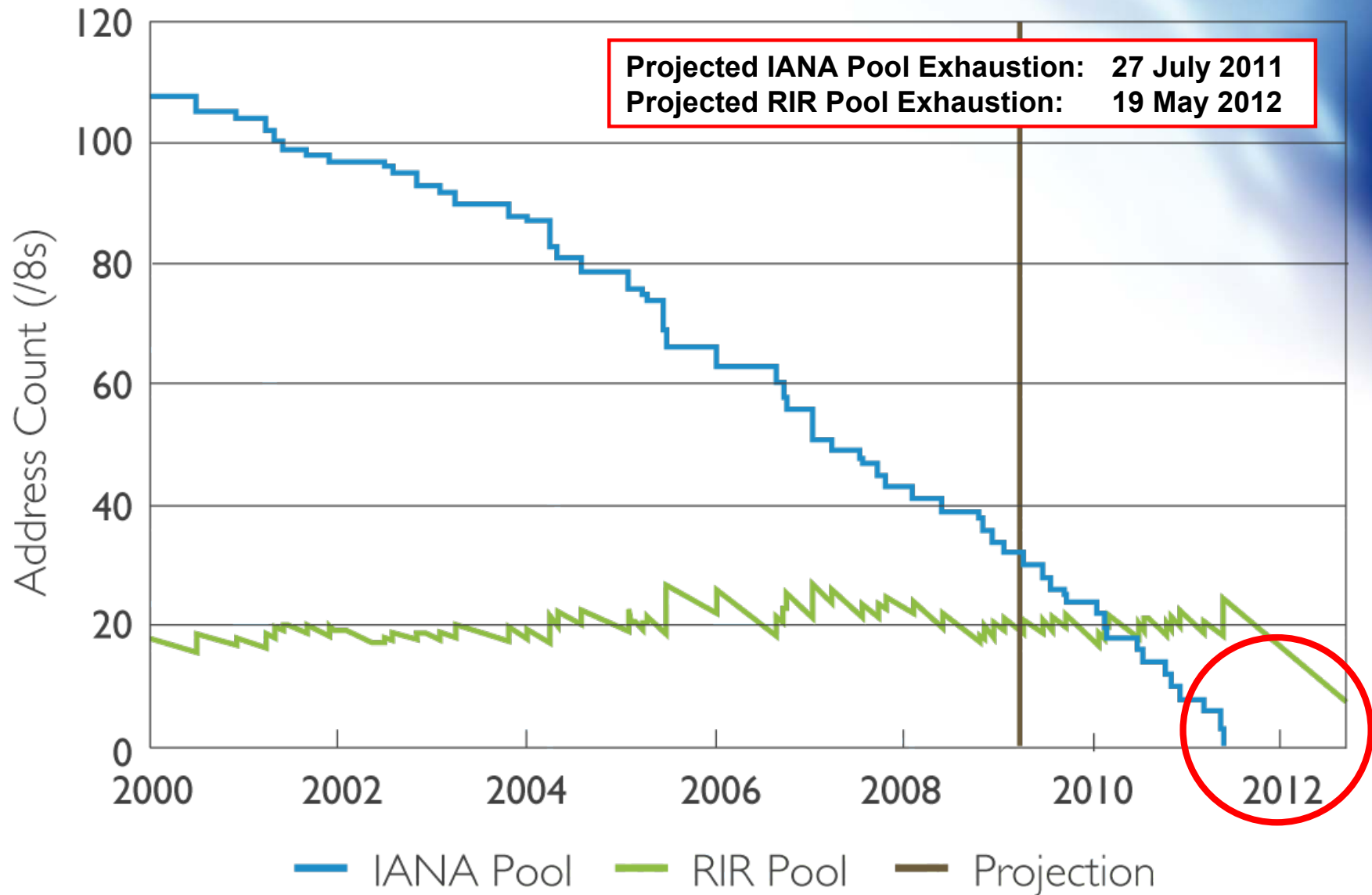
Network

Voice
Video
Data

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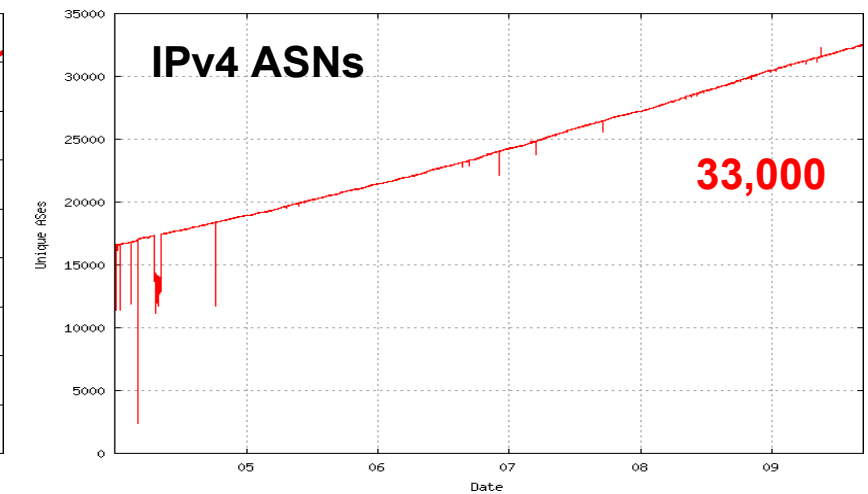
Fixed, Dialup/ISDN
Mobile/2G
Cable/ADSL

The "Narrow Waist" – Tomorrow

Everything over IP

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

Network

IP

IP over Everything

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

IPv4 Consumption: Projection

Projected IANA Pool Exhaustion: 27 July 2011
Projected RIR Pool Exhaustion: 19 May 2012

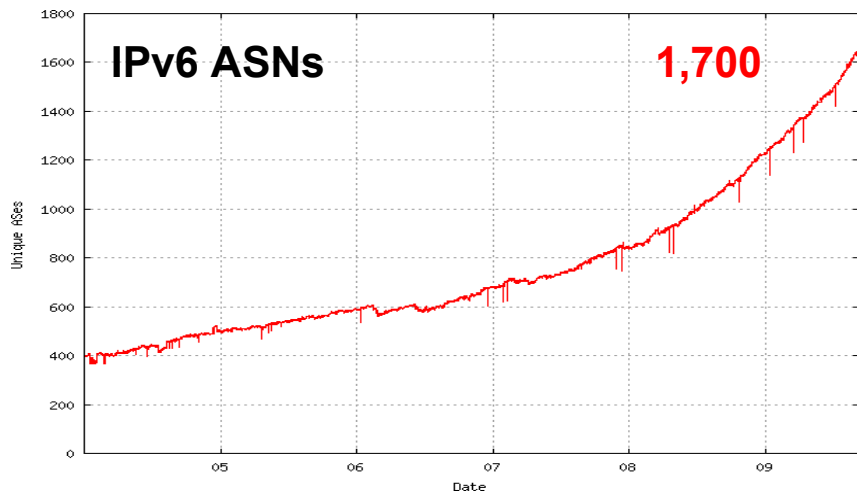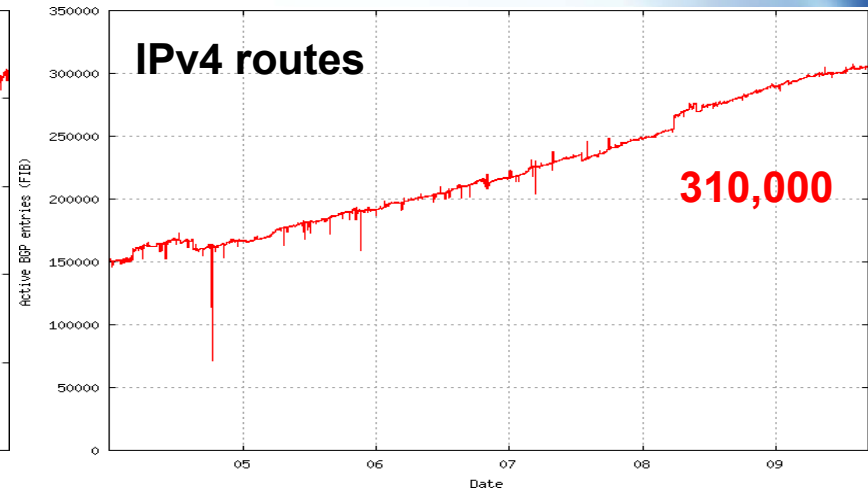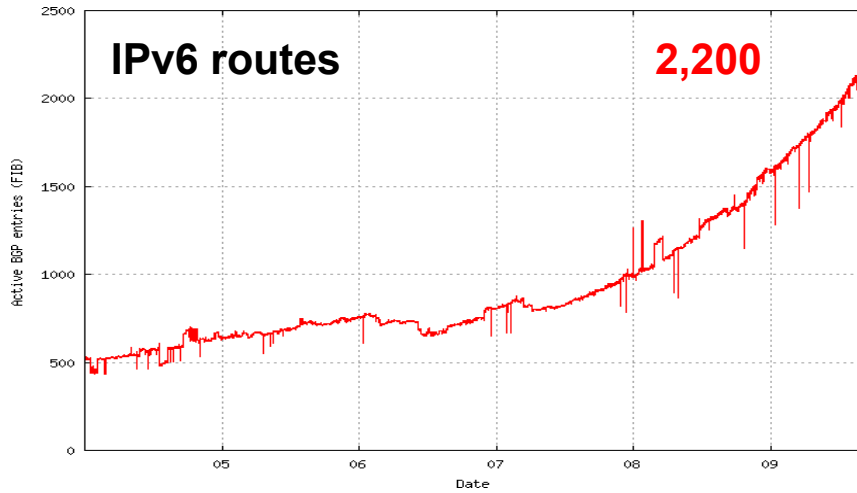IANA Pool — RIR Pool — Projection

A quick summary

- IPv4 addresses are a finite resource
  - Only about 10% remain
- But the demand for IP addresses will keep growing
  - More devices are requiring IP addresses
  - IP addresses are a pre-requisite for broadband penetration
- The remaining 10% is not large enough to support such demand

- *IPv6 is the only solution !*

IPv6 Allocations RIRs to LIRs/ISPs
How many allocations have been made by each RIR by year?

IPv6 deployment
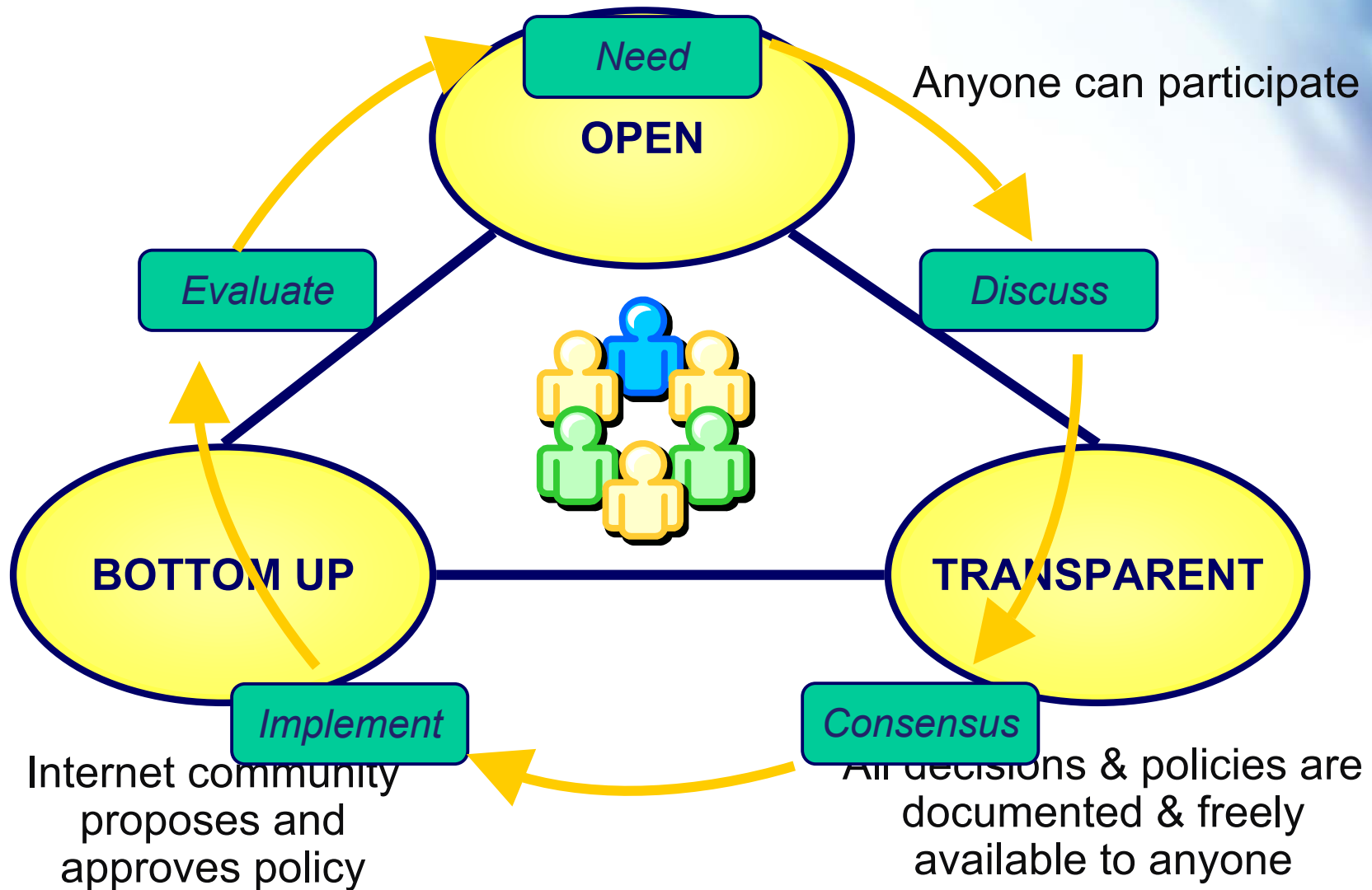
How are IP Addresses Managed?

- Regional Internet address Registries
  - Open membership-based industry bodies
  - Non-profit, neutral, and independent
  - Allocation, registration and other services
  - Other services as required

- First established in early 1990s
  - Voluntarily by consensus of community
  - To ensure responsible address management, according to technical and administrative needs
  - To support Internet development

- In the "Internet tradition"
  - Consensus-based, open, and transparent

Regional Internet Registries

Ripe NCC

ARIN

AfriNIC

APNIC

LACNIC

1992: "…it is [now] desirable to consider delegating the registration function to an organization in each of those geographic areas." (RFC 1338)

Open Policy Processes

http://www.nro.net

Where are we now

- IPv6 addresses are easy to obtain
  - Policies are established and stable
  - Minimal barriers to allocations
  - No reservations, but supply is huge
- IPv6 deployment strongly encouraged
  - Increasing promotion and awareness
  - Technical training and support
- Readiness is increasing and deployment is underway

Government Responses

- Promote IPv6
  - To ISP and telco Industries
  - Encourage IPv6 readiness if not deployment
  - Opportunity to "leapfrog" to latest technology
- Specify IPv6
  - Government equipment procurement
  - Network servers and services
  - Public infrastructure deployments
- Require IPv6
  - To the extent possible (cf digital TV)

The IPv4 revolution

- The 1990's – a new world of…
  - Cheaper bandwidth, switching
  - Lower operational costs
  - The PC revolution, funded by users
- The Internet boom
  - The dumb (and cheap) network
  - Technical and business innovation at the edges
  - Many compelling business cases for new services and innovation

An IPv6 revolution…

- The 2010's – a new world of…
  - Commodity Internet: Broadband, mobile, always-on
  - Massive reduction in cost of consumer electronics
  - A network-ready society
- An IPv6 boom?
  - One unified ubiquitous pervasive network
  - 2–3 orders of magnitude larger than today
  - "Internet for Everything"
  - Bringing online the "Next 6 Billion"

- *Let's get ready for IPv6 !*

Thanks

Paul Wilson
Director General
APNIC

pwilson@apnic.net