Why IPv6 now?

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Why IPv6 now?

- **The need for a "new IP" has been identified since many years:**
  - Needs identified in the early 90's;
  - Around 1992, IETF created the "IP: next generation" (IPng) working group;
  - IPng discussed in a wide set of RFCs, starting from RFC1550 (Dec. 93);
  - IPv6 chosen as the best candidate around 1995;
    - Base specification described in RFC2460;
- **IPv6 is a re-engineered version of IPv4:**
  - **Larger address space** (solve IPv4 address exhaustion);
  - **Many advantages**: auto-configuration, security, multi-cast, support for ad-hoc network, routing scalability, simpler header structure, improved protocol extensibility, etc.

Why IPv6 now? (cont.)

- **Why so much time for IPv6 to make its way through?**
  - Transition issues & co-existence of IPv4 and IPv6;
  - Mechanisms (NAT-like) have slowed down IPv4 addresses exhaustion;
  - The lack of IPv6 support in applications hinders IPv6 adoption;
- **Why now?**
  - IPv4 address space may be fully allocated to Regional Internet Registries by IANA around mid-2010;
  - IPv4 address pool in RIRs may be exhausted around mid-2011;
  - No more IPv4 address at all (assuming that allocated but unused prefixes come back in the “IPv4 market”) in 10 years!
  - http://ipv4.potaroo.net/.

ICANN resolution

On the Deployment of IPv6

Whereas, the unallocated pool of IPv4 address space held by IANA and the Regional Internet Registries is projected to be fully distributed within a few years;

Whereas, the future growth of the Internet therefore increasingly depends on the availability and timely deployment of IPv6;

Whereas, the ICANN Board and community agree with the call to action from the Address Supporting Organization and the Number Resource Organization, Regional Internet Registries, the Government Advisory Committee, and others, to participate in raising awareness of this situation and promoting solutions;

The Board expresses its confidence in the Internet community to meet this challenge to its future prospects, and expresses its confidence in the bottom-up, inclusive, stakeholder-driven processes in place to provide any needed policy changes, and;

The Board further resolves to work with the Regional Internet Registries and other stakeholders to promote education and outreach, with the goal of supporting the future growth of the Internet by encouraging the timely deployment of IPv6.

http://www.icann.org/minutes/resolutions-29jun07.htm#n

ARIN Board of Trustee resolution

Resolution of the Board of Trustees of ARIN on Internet Protocol numbering resource availability

WHEREAS, **community access to Internet Protocol (IP) numbering Resources has proved essential to the successful growth of the Internet; and,**

WHEREAS, **ongoing community access to Internet Protocol version 4 (IPv4) numbering resources can not be assured indefinitely; and,**

WHEREAS, **Internet Protocol version 6 (IPv6) numbering resources are available and suitable for many Internet applications,**

BE IT RESOLVED, **that this Board of Trustees hereby advises the Internet community that migration to IPv6 numbering resources is necessary for any applications which require ongoing availability from ARIN of contiguous IP numbering resources; and,**

BE IT ORDERED, **that this Board of Trustees hereby directs ARIN staff to take any and all measures necessary to assure veracity of applications to ARIN for IPv4 numbering resources; and,**

BE IT RESOLVED, **that this Board of Trustees hereby requests the ARIN Advisory Council to consider Internet Numbering Resource Policy changes advisable to encourage migration to IPv6 numbering resources where possible.**

ARIN
American Registry for Internet Numbers

Unanimously passed by the Board of Trustees on 7 May 2007.
http://www.arin.net/v6/v6-resolution.html

IPv6 and Grid

- **Why do we need to take care of IPv6?**
  - Sites starting to deploy IPv6 or new sites with IPv6 already;
  - Collaboration & inter-operability with other Grids already running on IPv6;
- **EGEE needs to be prepared for this evolution:**
  - **Need of an IPv6 ready middleware**;
  - Pushing IPv6 awareness within the community;
  - Knowledge of the implications of IPv6 deployment on:
    - System administration,
    - Security,
    - Third party software,
    - etc.

Outline of the session

- **How to port an application to IPv6?**
  - Detailed study with the BDII use-case;
  - Basic IPv6 testing;
- **IPv6 support in ETICS:**
  - What ETICS is providing to the developers with regard to IPv6;
- **IPv6 in other grid projects:**
  - The EUChinaGrid example,

Questions?