

European IPv6 Promotion

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Why an EU initiative? Background

- IPv4 address problem
- Basically two options:
 - Continue IPv4, manage scarcity
 - And introduce IPv6 only when IPv4 becomes truly unsustainable or we may have found something else
 - Introduce IPv6 proactively
- There are arguments in favour and against for both options
- ICANN and RIRs have stressed the need to adopt IPv6 as a matter of urgency
- European Commission shares this view and adopted Action Plan in May 2008

Why an EU initiative? Approach

- Adoption of IPv6 still very low
- Adoption is a largely decentralised and global market process ...
- ... in which the public sector and public policy play a role
- Incentives for individual actors to adopt IPv6 depend on the adoption of others (collective action problem)
- In such a situation public policy can make a difference

What are we proposing?

Action Plan Overview

- Strategic objective: **EU should have made a significant step by 2010**
- Stimulation of IPv6 reachable content, services, and business applications
- Timely preparation of the introduction of IPv6
- Public sector procurement
- Monitoring security and privacy implications

IPv6 security considerations (1/2)

- The larger address space makes IPv6 less vulnerable to random port scanning, this also helps to protect against many self-propagating worms
 - Provided network is not badly designed as alternative methods to find hosts will be used
 - Security by obscurity
- IPv6 security issues are partly different from those on IPv4 networks
 - Less experience, less well understood
 - Example: Neighbour discovery and stateless autoconfiguration (spoofing attacks)
 - Secure ND , 802.1x authentication
 - Issue of privacy addresses

IPv6 security considerations (2/2)

- Security products such as FW, IDS, etc are still lagging full support of IPv6
- Protocol weaknesses exposed
 - Example: Type 0 Routing Header vulnerabilities (In 2007 analysed by Philippe Biondi and Arnaud Ebalard from EADS)
- Although you may not have IPv6 deployed, existing IPv6 traffic could affect your network through tunneling
 - Vista by default IPv6
 - Islands of IPv6, attackers can use hosts to route traffic through sub networks without compromising routers and FW

Opportunity for Organisations?

- IPv6 key to a flexible architecture
 - Many network interfaces per device
- IPsec in IPv6 connects end points (not only border routers)
 - Creation of trust domains whereby hosts can be part of multiple of such domains
 - Host security required (managed clients)
 - NAT not needed (security by obscurity)
 - Granular security or more complexity?
- Positive user experience and agile business
 - Seamless remote access
 - Offer partners and customers access to resources on your network

Also an opportunity for private users

- Every private household can have a permanent address (space)
- Today users are charged for a permanent IPv4 address or Webhosting
- IPv6 makes it easier (and cheaper) for users to
 - operate their own home server and network, including sensor networks
 - offer their content on their own website
 - collaborate directly (without server)

Current activities at EU level

- Discussion with Member States
 - Council on 27 November 2008
 - Currently follow-up discussions
- Major study to measure IPv6 deployment throughout the EU just launched
- Two recent FP7 projects:
 - <http://www.6deploy.eu/>
 - <http://www.efipsans.org/>
- Various outreach activities
 - One big task: How to motivate popular Websites to be IPv6 reachable
- Preparatory work to introduce IPv6 in Commission's network

Outlook

- Speed of IPv4 exhaustion not clear
 - Today we expect sometimes in 2011
 - But market reactions to rationalise the use of addresses may come
- The dilemma remains:
 - Great benefits for users and society
 - Little incentives for individual actors; IPv4 exhaustion not felt as an immediate problem; wait and see mentality
- IPv6 is no longer an awareness issue: **It is about doing it**