The Transition from IPv4 to IPv6: Public Policy Overview.

OECD report: Economic Considerations in the Management of IPv4 and in the Deployment of IPv6
Available at http://www.oecd.org/dataoecd/7/1/40605942.pdf

ICANN ALAC Workshop: *Internet End-Users and the Transition from IPv4 to IPv6*,
Paris, France, 23 June 2008

Why is the IPv4/IPv6 issue relevant to public policy makers?

1. Public institutions rely on Internet as others

2. Internet as platform for innovation & growth requires <u>IPv6</u>

- IPv6 necessary for Internet economy growth LT the alternatives entail unacceptable risks.
  - Limitations on scalability (dense NAT without IPv6).
  - Hurried/unstable IPv6 deployment (wait and rush).
- Need to promote interoperability where possible.
- As IPv6 becomes norm, IPv6 expertise key for economic competitivity.

3. Security and competition concerns regarding <u>IPv4:</u>

- New entrants will need IPv4 resources to interoperate with IPv6.
- Security and consumer protection issues if IPv4 address transfers take place without being recorded.

All stakeholders, including governments, have a role to play. Need for multi-stakeholder co-operation.

Government's role is not about regulation, but about working with technical experts and business to:

- Role 1: Build awareness of issue & help to ease bottlenecks.
- Role 2: Be early adopters.
- Role 3: Co-operate internationally and help monitor progress of deployment. E.g. *OECD Ministerial Declaration on the Future of the Internet Economy*, 18 June 2008 :
  - Section on IPv4/IPv6 based on OECD analytical report.
  - High-level political commitment. Adopted by 40+ governments.

« WE DECLARE that, to contribute to the development of the Internet Economy, we will… Encourage the adoption of the new version of the Internet protocol (IPv6), in particular through its timely adoption by governments as well as large private sector users of IPv4 addresses, in view of the ongoing IPv4 depletion… »

Measurement and statistics

- Essential for informed policy.
- Encourage all relevant parties to track the deployment of IPv6.
- What measurements could be feasible? By who? To answer what questions? With what funding? What consistent methodologies?…
- *E.g.*, potential food for thought?
  - Traffic measurements at Internet eXchange Points?
  - Questionnaire at the RIR-level to applicants for IPv4 address space (a potential policy proposal)?
  - Surveys to operators through national statistical offices on IPv6 coverage?
  - Quantity / ratio of IPv4/IPv6 root server queries?
  - Measurements at the level of content providers?
  - Evolution of IPv6 routing table?
  - Comparing IPv4/IPv6 route maps?

Moving forward… Possibility to put in place statistical methodology to measure progress of IPv6 deployment?

Merci !

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www.oecd.org/dataoecd/7/1/40605942.pdf

www.oecd.org/FutureInternet

APPENDIX

(additional background information)

IPv4 insufficient, but transition to IPv6 poses important challenges

- Facing **IPv4** address space issue has become more **urgent** due to consumption acceleration since 2005.
- **IPv6** widely viewed as **way forward.**
- Market has been **slow** to adopt IPv6 -- 21% IXP support (PCH) and 3.3% ASes with some IPv6 activity (Geoff Huston).
- Transition to IPv6 poses important **challenges**:
  - Many networks, services and users will need both IPv4 **and** IPv6.
  - Immediate costs // long-term benefits + need critical mass.
  - Requires time, awareness and finding skilled resources.
- Cannot ignore future of IPv4:
  - More IPv4 « à la NAT ».
  - Transfers of previously allocated IPv4 addresses.

Government role 1: Education & awareness and easing bottlenecks

- IP addressing should not be considered a technical specialist's topic only.
- Target decision-makers' awareness.
- During IPv4/IPv6 co-existence: need to maintain operations & interoperability.

- Ease bottlenecks…
  - **Operators** to facilitate IPv6 deployment: training, equipment renewal...
  - **Operators** to consider IPv6 connectivity in traffic exchange agreements
  - **Software developers** to be « IP agnostic » + develop new apps leveraging IPv6 functionality.
  - **Greenfield deployments** to use IPv6 from the outset.
  - **CPE providers** to plan for IPv6.

Government role 2. Government adoption of IPv6

- Plan adoption of IPv6 for governments' internal use and public services.
- Ensure new public programmes consider IPv6. Assess existing programmes & priorities to see whether could benefit from IPv6.

FEDS BUY THEIR WAY TO IPv6 COMPLIANCE

Here's how federal information technology officials responded to the question, "What percent of your new IT procurements are IPv6-capable?"

RESPONDENTS N=110	NEW IT PURCHASES THAT ARE IPV6-COMPLIANT
44%	100%
10%	75% or less
5%	50% or less
4%	25% or less
3%	10% or less
5%	None
29%	I don't know

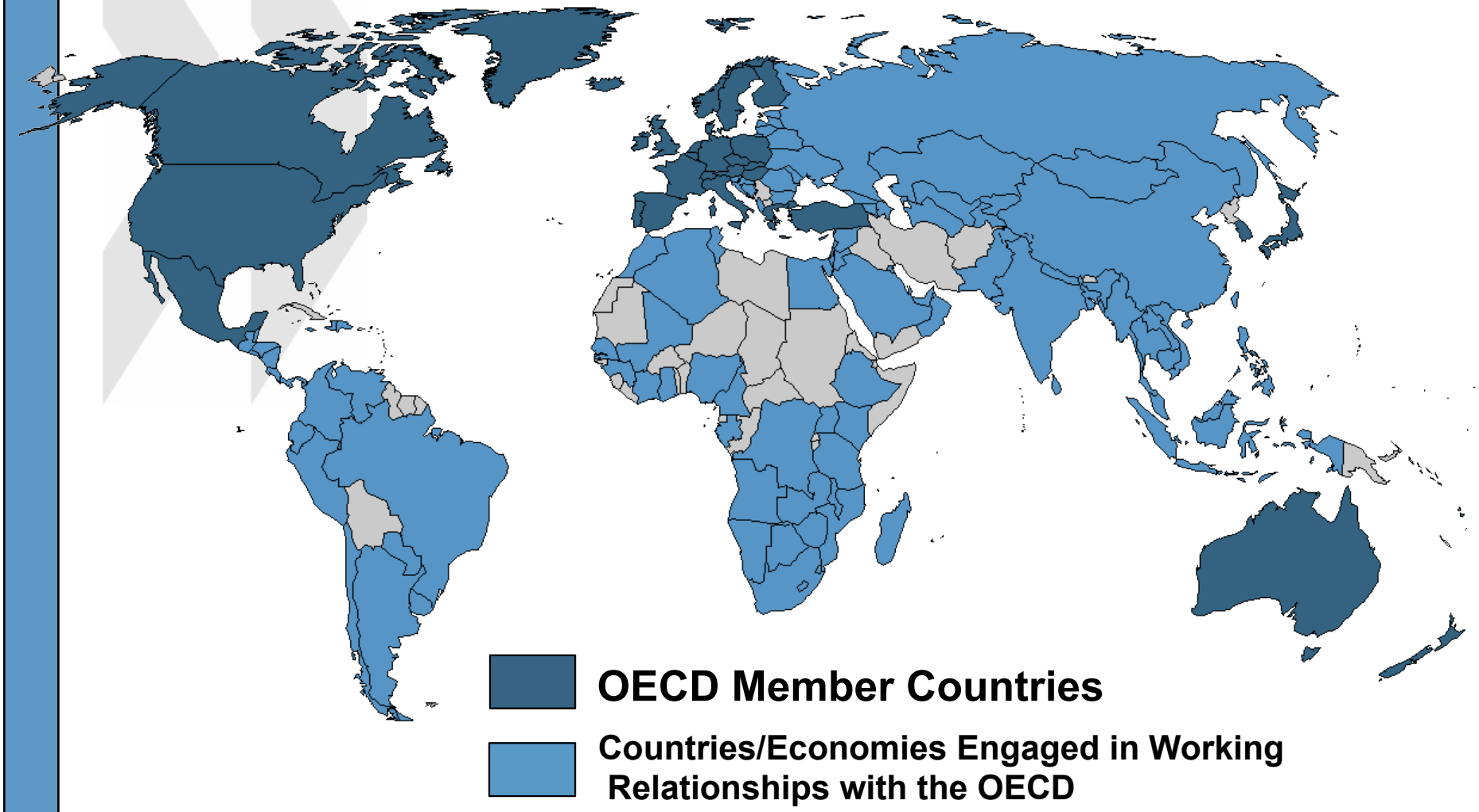
Source: Federal Computer Week

- Ensure relevant government security entities integrate IPv6 security dimension.
- Include IPv6 in training initiatives.

(Background) What is the OECD?

- **Forum** for governments to together address economic and social challenges of globalisation
  - 30 Member countries/governments: 40 000 senior officials from national administrations come to OECD meetings each year
  - Over 70 developing and transition economies engaged in working relationships with the OECD, e.g. through APEC
  - Private sector represented via BIAC
  - Trade Union Advisory Committee TUAC
  - Committees and Working Parties: about 200
  - ***Successful co-operation between ICCP Committee and Internet technical community and civil society around the Seoul Ministerial – looking to formalise relationships and processes.***
- Provider of comparative data, analysis and forecasts to underpin multilateral co-operation
- Rules of the game and best practices

OECD has a global outreach



Goals of the OECD Ministerial on the Future of the Internet Economy

1. Call attention to the fundamental role the Internet plays in our economies and societies and the need for policies to reflect this reality;
2. Identify ways the Internet Economy can help address global challenges such as climate change;
3. Establish a global dialogue on **how best to safeguard the Internet's future and expand access to the next several billion of users and devices**;
4. Discuss practical methods for improving cross-border coordination for protecting consumers, enhancing privacy and security.