IPv6 Way Forward for Canada

Final report of the Canadian IPv6 Task Group

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Genesis of the Canadian IPv6 Task Group

At the ISACC's 40th Plenary in april 2009, where IPv6 was the lead topic, Ms. Helen McDonald (ISACC Vice-Chair and Assistant Deputy Minister, Spectrum, Information Technologies and Telecommunications at Industry Canada) invited the ISACC membership to create a Task Group on IPv6 Deployment in Canada. The consensus was that Canada had not taken a leadership role globally in the adoption of IPv6 so far and that there was no agreed Canadian view on when and how to migrate from IPv4 to IPv6. There was concern whether this approach would put Canada at a disadvantage in light of initiatives already under way in the United States and overseas.

The Plenary decided the immediate creation of an IPv6 Task Group.

The agreed deliverables of the IPv6 Task Group were

To explore the options available to Canada regarding IPv6 deployment.

For each of the options identified:

- analyze benefits and challenges

- explore actions to be taken by the public and private sector

- recommend policy directions to Industry Canada.

Why did Industry Canada and isacc put emphasis on IPv6? Simply to help ensure Canadian competitiveness in telecomms.

The growth in Broadband subscriptions has helped fuel the expansion of the internet but also been a source of its growing pains. The growth in the number of networks – and devices attached to those networks – has led to a shortage of unique addresses used to identify individual devices connected to the internet. As a result there is a need for all network operators to upgrade to a new internet addressing scheme, internet protocol version 6 (IPv6). Based on allocation trends, experts estimate that the addresses in the current scheme (IPv4) will run out late 2011 or early 2012

OECD 2009 Telecommunications Outlook p 147

Telecommunications is a $1.3 trillion market
in the OECD and represents 3% of the OECD GDP

How the IPv6 Task Group completed its assignment

▪Around 40 participants sollicited from various segments of industry and Government including CRTC, the Canadian regulatory body

▪Work started in june 2009 ; 15 meetings, 6 of them face to face.

▪Recommendations presented at the 41st isacc plenary on november 5th 2009.

▪Two co-editors, Marc Blanchet and Ed Juskiewicz appointed to write the final report and justification.

▪Report and recommendations were presented and accepted at the special 42nd isacc plenary on March 16th 2010.

▪The work is completed and the IPv6 Task Group dissolved.

▪All presentations and the report can be found on the isacc website under http://isacc.ca/isacc/english/meetings/archived_plenary/?plenary_42

That bad ? Are we really running out of IP addresses?
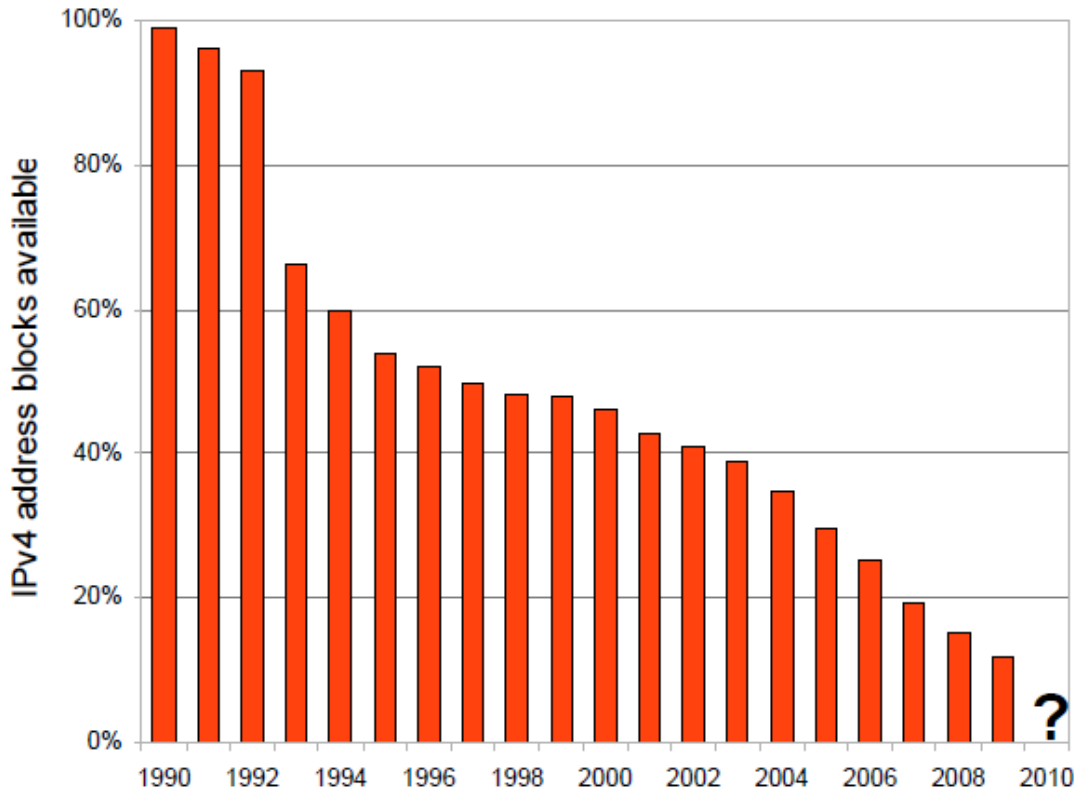
- Remaining: 8%

- Average consumption rate=5%/year

- Complete exhaustion 2012

Can you spare a couple of billlion IP addresses, mate?

'As the world's biggest Internet market, China is likely to need 34.5 billion IP addresses in the following five years'

He Bao Hong, MIIT Telecom Research Institute, at the 2010 China IPv6 Summit.

The indian Government intends to roll out broadband internet access to all 630,000 towns and villages. They believe that every village with a population of more than 300 people can be connected by May 2012.

as reported on sitepoint april 7th 2010

It is self evident that the IPv4 address space cannot sustain this growth

Canada has enough IPv4 addresses, can't we wait a bit more ?

Yes, but increasingly risky considering:

- ➢ Anticipated revenue streams associated with a mobile internet (LTE), broadband (IPTV, video..) and hyperconnectivity (sensor networks, cloud computing ..)
- ➢ Loss of competitive edge and capex/opex peak for late comers

Growing urge to move is detectable :

- ➢ Darwinian forces at work as the IPv4 based ecosystem is nearing its end
- ➢ For late movers, Corporate survival instincts start to kick in.
- ➢ Telecomm and GDP growth are closedly linked in a global economy.

To remain relevant, economies have to evolve to IPv6

The seven recommendations of the ISACC IPv6 Task Group

1. Government : specify IPv6 support in your IT procurements immediately

2. CRTC : ensure that the relevant Telecommunications decisions and policies support IPv6 deployment.

3. ISP's : accelerate deployment and commercial availability of IPv6

4. Industry : intensify IPv6 support on all products, at least on par with IPv4

5. Content providers : make your content and application IPv6 accessible

6. Set up Center of Excellence to increase awareness, train, educate, advise, share best practises

7. Use Government programs to promote and support IPv6 transition.

Government as stakeholder

- **Major project and Request for Proposals planned in the near future to upgrade and consolidate the multiple Government departmental networks into a smaller more manageable number.**

- **Future purchases should be IPv6 capable or have a committed roadmap to support IPv6 by a software only upgrade – reducing risk of major upgrades to support future IPv6 requirements**

- **Plan for a phased IPv6 deployment**

- **Good policy to show responsible management of tax payers dollars.**

- **Government IT procurement policies constitute a major catalyst for the national telecom industry.**

- **Government IT should be able to satisfy state of the art communications needs internally and with its citizens and partners in a Global Economy.**

CRTC as stakeholder

The CRTC should consider the role IPv6 can play in realizing the objectives of the Telecom Act, which are:

- (a) to facilitate the orderly development throughout Canada of a telecommunications system that serves to safeguard, enrich and strengthen the social and economic fabric of Canada and its regions;
- (b) to render reliable and affordable telecommunications services of high quality accessible to Canadians in both urban and rural areas in all regions of Canada;
- (c) to enhance the efficiency and competitiveness, at the national and international levels, of Canadian telecommunications;
- (d) to promote the ownership and control of Canadian carriers by Canadians;
- (e) to promote the use of Canadian transmission facilities for telecommunications within Canada and between Canada and points outside Canada;
- (f) to foster increased reliance on market forces for the provision of telecommunications services and to ensure that regulation, where required, is efficient and effective;
- (g) to stimulate research and development in Canada in the field of telecommunications and to encourage innovation in the provision of telecommunications services;
- (h) to respond to the economic and social requirements of users of telecommunications services; and
- (i) to contribute to the protection of the privacy of persons.

ISP's as stakeholder

- **Canadian Internet Service Providers (ISPs) acknowledge that adoption of IPv6 is imminent**

- **They recognize the need to prepare their communication infrastructures and systems for supporting commercial IPv6 access and network services.**

- **The associated IPv6 support timelines should align with anticipated customer demands, foreseen IPv4 public and private address exhaustion and industry standard specifications.**

- **ISPs should drive the support of IPv6 peering in existing and future Canadian Internet Exchange Points to ensure interoperability.**

Content Providers as stakeholders

- In an acute adddress depletion scenario, the content providers are the first affected as accessibility to their serices implies routable IP addresses.

- The very existence and growth of business entities such as Google are predicated on a non fragmented internet, hence their interest.

- Revenue opportunities associated with new offerings such as location based services and mobile social networking

Industry as stakeholder

- Major router equipment suppliers have been readying for IPv6 for a number of years, dito for suppliers of major software operating systems and applications.

- The delaying factor so far has been the lack of customer demand from the Corporate and Government as well as residential sectors.

- The chicken and egg conundrum is being broken by Government led initiatives in a number countries.

- The growing number of Government tenders mandating IPV6 support is putting pressure on the industry to enhance their IPv6 support.

- Industry anticipates a rise in demand as the address depletion becomes more acute and an urgency to upgrade fast increases.

Government programs to support IPv6

- The migration to IPv6 technologies broadly impacts a variety of key Canadian policy imperatives including infrastructure, environmental sustainability, improving the knowledge economy and public safety.

- Communications materials should be developed to encourage businesses to leverage the wide array of existing government benefit programs (SRED, EnergyStar discounts, etc.) to support their migration efforts.

- Clear policy statements as to eligibility of IPv6 in these programs should be made to reduce up-front-risk to project managers and CFOs planning IPv6 related work.

IPv6 Centre of Excellence

- **Industry lead 'virtual' Canadian CoE for IPv6**

    - **to increase awareness and provide training**
    - **create a community of subject matter experts (SME),**
    - **share best practices about adoption of IPv6,**
    - **facilitate discussion and collaborate with other agencies in US and elsewhere for education and training purposes,**
    - **create working group recommend mechanisms to encourage the deployment of IPv6 by Government and Industry**
    - **facilitate the set up of an IPv6 conformity and interoperability lab for HW and SW open to Government and Industry.**
    - **Concentrate on system/solution instead of just « RFC » conformance**

Any concrete results so far?

The Canadian Federal Government prepares a major Request for Tender to update and consolidate their numerous telecom services: the GENS project (Government Enterprise Network Services). IPv6 support will be mandatory.

Canadian ISP's are still curtsying to each other 'You go first' but watch their Southern neighbours, Comcast and now Verizon from the corner of the eye.

The Quebec Provincial Government did not wait for prodding by a IPv6 Task Group: in their late 2008 RFQ for IP services they mandated IPv6 based on pragmatism.

1)Our procured goods have to be good for five years

2)A quasi certainty exists that we run out of IPv4 addresses within that interval

3)Avoid bad surprises of unanticipated and unbudgetted upgrade expense because IPv6 was not adequately covered in the original specs.

Some suppliers like Ottawa's Eion, active in fixed Wimax did not need prodding. IPv6 support was simply a must in the export markets they targetted.

Survival in the Global Rat Race:

To be a good follower is often a viable strategy but to be outdistanced never will be

Task Group Membership

Name	Affiliation and/or IITG Role
Jim MacFie	Microsoft Canada, and ISACC Chair
Yves Poppe	Tata Communications, and Task Group Chair
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