Government of Canada | Gouvernement du Canada

Government of Canada IPv6 Adoption Strategy

IEEE International Conference on Communications

(ICC '12)

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Canada

IPv6 Context

- **The internet is running out of IPv4 addresses now – IPv6 is here**
  - RIPE NCC is tracking the declining IPv4 address pool weekly at
  - http://www.ripe.net/internet-coordination/ipv4-exhaustion/ipv4-available-pool-graph
  - IANA issued its last IPv4 address blocks to the RIRs in February 2011
  - APNIC allocated the last of its IPv4 addresses in April 2011
  - RIPE expects to exhaust its remaining IPv4 addresses this July 2012
  - ARIN expects to allocate the last of its IPv4 addresses by July 2013

- **IPv6 provides larger addressing space than IPv4 in support of ever increasing business needs**
  - Created in 1999
  - 4.3 billion addresses in IPv4 (2^{32})
  - 340 Trillion Trillion Trillion addresses in IPv6 (2^{128})

- **IPv6 not backward compatible with IPv4**
  - Bridging can lead to uneven grade of service and transparency issues

- **IPv6 adoption is gaining speed, fast.**
  - IPv6 Services emerging (GOOGLE, Facebook, Yahoo!, …)
  - Many governments have already outlined IPv6 migration strategies

IPv6 is inevitable and is at our doorstep

Business drivers

- **Continuity of Government of Canada services offered to the world**
  - Seamless, uninterrupted IPv4/6 access to GC services, worldwide

- **Continuity of internet access to public servants**
  - GC business is geographically dispersed throughout the world
  - Inter-operability with clients, suppliers, and global partners who are on IPv6 networks

- **Drive for consistent implementation across GC**
  - IPv6 deployments require planning and time – they do not occur overnight
  - Prevent uncontrolled implementations, business disruptions
  - Facilitate knowledge and experience sharing
  - Opportunity to drive lower operational costs via integrated security and network simplification

- **Demonstrate leadership in a new digital economy**
  - Expanding list of G8 and G20 countries moving swiftly to implement IPv6
  - GC driver for IP relevance for citizens and future business opportunities
  - Position Government of Canada as a leader in transitioning to IPv6

GC IPv6 strategy execution is required

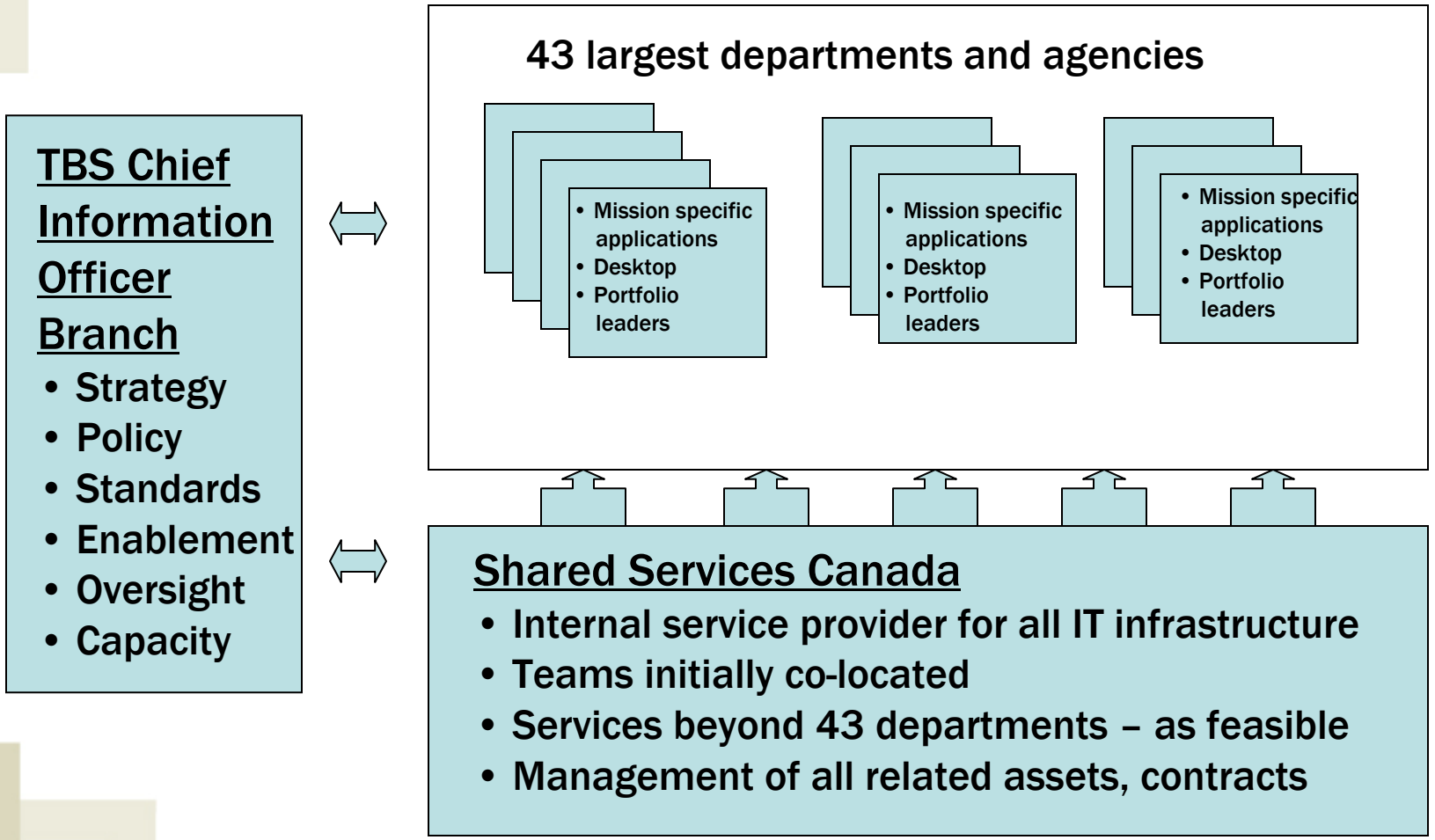
Transition principles

- ✓ Must allow ubiquitous IPv6 global access to GC services by interested parties and conversely allow GC employees access to the public internet from domestic or international GC points of access
- ✓ Must ensure continued high availability of services as a result of scalable, robust and secure infrastructure
- ✓ Must align with GC enterprise network architecture and standards
- ✓ Must minimize transition and operating costs, risks and operational IT impacts to networks and systems
- ✓ Should, in addition, position Government of Canada as a leader in transitioning to IPv6 thereby encouraging the migration of domestic telecommunication service providers to IPv6

Publically available : http://www.tbs-sct.gc.ca/it-ti/ipv6/ipv602-eng.asp#toc21

Foundation to guide implementation strategies

Government of Canada IT Service Delivery Context



IPv6 Adoption Strategy will leverage this delivery context

GC IPv6 adoption strategy

- **Start with the perimeter and move towards the center of the core**
- **Phased approach to achieve adoption of IPv6 :**
  - Enabling Phase *(to be completed by end of September 2013)*
    - Develop IPv6 target architecture and standards, and update supporting procurement vehicle procedures, accompanied by a change management strategy for the community, including policies, communications and training
    - Establish governance bodies such as a Community of Practice and Steering Committee to oversee the transition
    - Enable IPv6 connectivity for Internet-facing websites through a shared service
  - Deployment Phase *(to be completed by end of March 2015)*
    - IPv6 enable principal GC externally-facing websites and ensure that new internet-facing websites and applications put in service from April 2015 onward, are IPv6-compliant
    - Provide public servants transparent access to public IPv6 internet
  - Completion Phase *(April 2015 and onward)*
    - Complete IPv6 enablement of websites, and as necessary the IPv6 enablement of internal applications
    - Expected to take a number of years to complete
- **Business focussed and cost sensitive approach :**
  - Leverage shared enterprise network architecture to minimize costs and risks
  - Plan, leverage equipment and software refresh cycles to minimize costs

IPv6 Community Engagement

- Principles communication — Jun 2011
- Chief Information Officer Council — Dec 2011
- Industry consultations — Feb 2012
- Collaboration with other nations — Mar 2012
- External communication — Jun 2012
- IEEE Communications Conference

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