


Policy and Regulatory Challenges Facing the NGN

Workshop on Interconnection and Next Generation Networks
Addressing the Regulatory Challenges
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We are in the Network Economy



Information and Communications Technologies (ICTs)

- are pervasive in our society
- are critical to business success
- boost SME productivity and revenue growth
- are critical to Canada's competitiveness

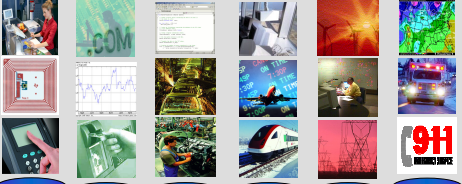


The communications infrastructure is the foundation of Canada's network economy

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Modern society is dependent on communications infrastructure



Communications Infrastructure

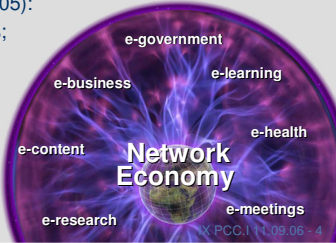
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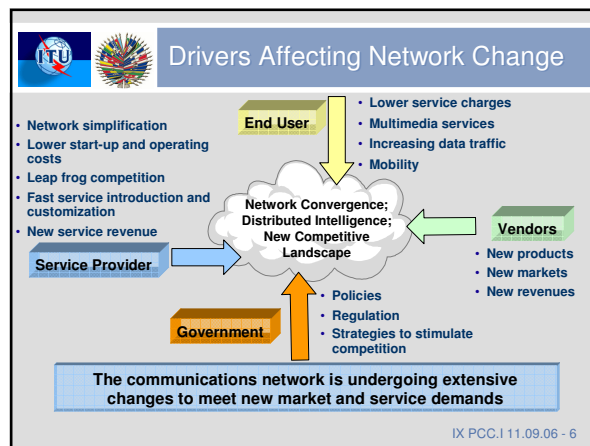
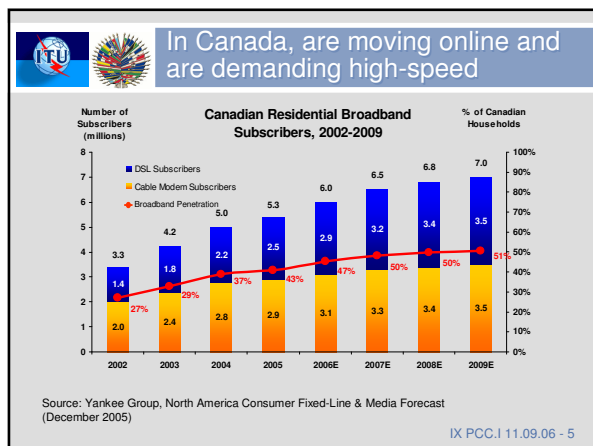
The network infrastructure powers the network economy

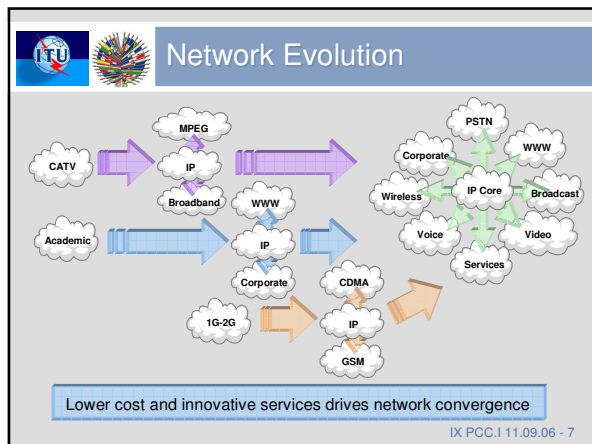
Sizing the Network Infrastructure

- 972 million users on the internet today (Nov 2005)
- 360 million internet hosts (July 2005)
- Internet usage (July 2005):
 - Canada 63%; UK 63%;
 - USA 68%;
 - Australia 68% ;
 - Korea 65%
- 2 billion mobiles in the world today and counting



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Implications of Convergence

- New and innovative applications and services
 - New revenues available to application and service providers
- Same services are being offered using different means of access
 - Service providers can compete with other service providers without competing against other forms of providers (network or access providers)
- A converged network with IP core and access simplifies network operations
 - Costs of operating a converged network are lower
- New policy and regulatory frameworks
 - Need coherent regulation of communications infrastructure to deal with the fact that content can be delivered over all networks, network-dependent rules are being overtaken by technology, and markets are merging
 - Promote competition, protect consumers, and encourage efficient investment

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Next Generation Network (NGN)

- The ITU-T has defined a framework for network evolution, called the Next Generation Network (NGN)
- Key Characteristics (Recommendation Y.2001)
 - Packet-based network
 - Independence of service-related functions from underlying transport technologies
 - Interworking with legacy networks via open interfaces
 - Generalized mobility
 - Unrestricted access by users to different services and/or service providers

[<http://www.itu.int/ITU-T/eng/>]

NGN is not only a network evolutionary transformation, but also a radical overhaul of the telecommunications environment

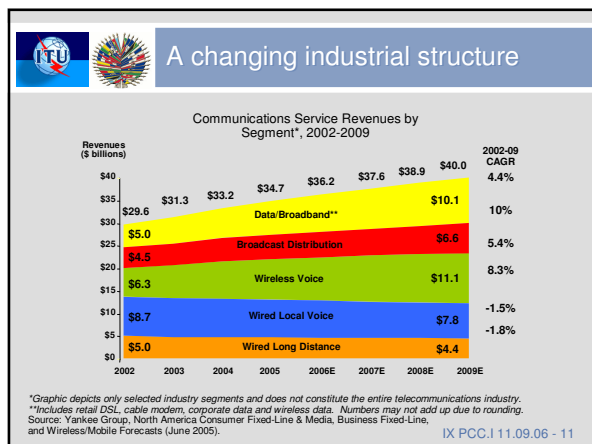
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Government in action

Many challenges lie ahead...

- VoIP
- Telecom Review Panel
- Spectrum Management
- Accessible Technology
- Timely Standards
- Emergency Preparedness
- Cyber Security
- Spam

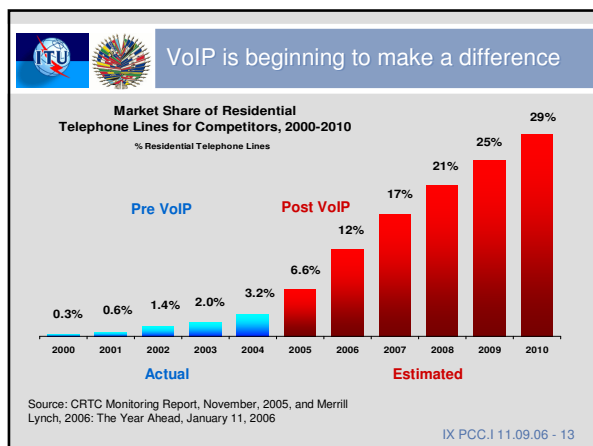
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VoIP Challenge

- **V**oice **o**ver **I**nternet **P**rotocol (**VoIP**) separates **access** from **service**
- No longer need to own telephone network to offer phone service
- Surge of new competition coming:
 - Skype (eBay)
 - Vonage
 - Cable Companies
 - Microsoft, Yahoo, AOL, Google, IBM, EDS?

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VoIP Standards & Technical Issues

- CRTC decision on VoIP
- Difficult to achieve interoperability between VoIP service providers.
 - Standards can help achieve this goal.
 - Development ongoing in ITU-T, IETF and others.
- Quality of Service is important
- Electronic Numbering / Telephone Number Mapping
 - Discussions in Canada to implement ENUM services
 - Canada has indicated its support for ENUM trials in North America – country code 1
 - US trial to be launched shortly
- Emergency Services
 - Consumer emergency call with caller location E9-1-1
 - Priority access during or after disasters

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Telecom Policy Review Panel

- Independent panel of experts appointed by Minister of Industry April 2005
- Report issued on March 22, 2006 provides 127 recommendations for ensuring Canada's competitiveness in the Network Economy
- Panel's mandate had three central themes:
 - setting the appropriate regulatory framework
 - encouraging adoption of ICTs
 - access to advanced telecommunication networks and services

www.telecomreview.ca

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Spectrum Management Challenges

- Modernizing Spectrum Policy and Management
- Global and Regional Harmonization
- Opening new bands, accommodating new services
 - RFID
 - Ultra Wide Band (UWB)
 - Software Defined Radio (SDR)
 - Broadband over Power Lines (BPL)
 - Unlicensed Bands

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Challenges for Persons with Disabilities

- 15% of Canadians have disabilities (Statistics Canada)
- 32% of Canadians between age 64 and 75 have disabilities
- 31% of Aboriginal Peoples have disabilities

...the Government of Canada is helping through accessible technology

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Content challenge

Emerging digital copyright issues:

- P2P networks
 - 5.7 million Canadians have downloaded music files (Ipsos-Reid, May 2004)
 - More than 44 million full-length movie files and 1.3 billion songs available (BigChampagne LLC, Reported In Kansas City Star, October 2004)
- ISP liability
- Fair usage

Advancing technology is threatening cultural policy:

- Satellite TV
 - Black Market/Grey Market
 - Access to foreign and ethnic programming
- Satellite Radio
- Internet - movies, music, videos on demand
- IPTV (content-based or usage-based charging)

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Illegal and Offensive Content

Child pornography, online luring, child prostitution, child sex tourism and other activities are of growing concern

- Cyberwise Strategy
 - Agenda for confronting illegal and offensive content
 - Multi-stakeholder partnership
- Cybertip.ca
 - Initiated by Child Find Manitoba and Industry Canada
 - Canada's national tipline
 - Analyzing tips from public
 - Referrals to law enforcement



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Maintaining the trust and confidence in our networks is critical

- Growing socio-economic dependence on communications technology infrastructure
- As with previous networks (electricity, telephone, railways, airlines), users must have confidence that the networks are reliable and can be trusted
- Confidence will be lost if:
 - Networks cannot be protected from attacks
 - Services cannot be protected from abuses
 - Quality of communications services cannot be assured
 - Communication sessions are insecure and private information is compromised



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Ongoing concerns about privacy and security

Crumbling Confidence*

Threat	Confident (%)	Not confident (%)
Personal Information	21%	79%
Identity theft	26%	74%
Unsolicited email/spam	32%	68%
credit card fraud	38%	62%
Computer virus	43%	58%

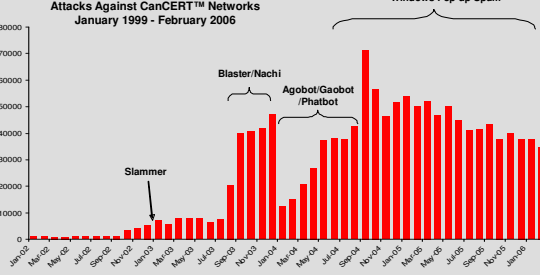
Q: How confident are you in your ability to protect yourself from the following threats online?

Source: Understanding Consumer's Needs for Internet Security, Forrester Custom Consumer Research and Business Software Alliance, November 2005
 *Survey of respondents in Canada, USA, UK and Germany

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Malicious attacks continue to menace

Attacks Against CanCERT™ Networks January 1999 - February 2006



CanCERT™ is Canada's first national Computer Emergency Response Team (CERT) operated 24/7 by EWA-Canada since 1998. The above graph depicts the number of attacks per month against CanCERT™ networks during the period January 1999 to February 2006.

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More alarmingly, cybercrime is growing

Online identity theft growing


- Phishing attacks aimed at identity theft now affect roughly 1 in 4 Americans (23%) each month emails (AOL/National Cyber Security Alliance (NCSA) Online Safety Study - December 2005)
- Cost in the last 5 years in the U.S. was \$60 billion (FTC)
- In Canada, 13,000 cases reported (ComputerWorld Canada)

E-mail fraud

- High profile attacks include Visa, Bank of America, Bank of Montreal, eBay, Best Buy, Yahoo, MSNTV... (Symantec)
- 1.78 million have fallen victim to online fraud (Symantec)
- U.S. banks and credit card companies have paid almost \$1.2 billion in damages (Symantec)

E-commerce attacks & extortion

- Almost 16% of attackers targeted e-commerce organizations, compared to 4% during the last six months of 2003 (Symantec)



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Driven by internet threats...

Privacy fears discouraging e-commerce in Canada

- 40% of Canadians avoid online shopping over security concerns, compared to 24% of Americans (Canadian Alliance Against Software Theft (CAAST) - November 2005)

Users changing their online behaviour due to security concerns

- Majority (91%) of Internet users in the US have altered online behaviour (Pew Internet and American Life Project - June 2005)
- 40% of Canadians said they would not do any shopping online due to concerns about internet security (Forrester and Business Software Alliance - November 2005)

Consumers losing trust in online banking

- 74% of Canadian online consumers have concerns about email fraud which are affecting their online financial behavior (Forrester - April 2005)
- 80% of consumers in the USA, Canada, Germany & U.K are concerned about someone stealing their on-line identity and using it to access their on-line bank accounts (2004 Entrust Internet Security Survey)

... contributing to a loss of trust



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Report of the Task Force on Spam



Task Force made 22 recommendations to address spam, spyware and emerging online threats, including:

- New legislation
- Effective enforcement
- Policy leadership and coordination
- Public education and awareness
- Strengthened international cooperation

Task Force reported on action to date:

- Analysis of gaps in legal ground rules and enforcement;
- Developed network management practices to combat spam;
- Developed electronic marketing guidelines;
- Established public awareness "Stop Spam Here" campaign (Icon, website and messages to consumers);
- Active participation in international efforts – OECD etc.

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What are the NGN Challenges ahead?



- Timeliness to meet new technology needs
- Solving the Interoperability issues
- Robustness of standards and immunity to attack
- IPR policies for SDOs that inhibit IPR ambushing
- Cross pollination of standards activities e.g.
 - between IETF & ITU on Internet standards
 - between ISO & ITU on Security standards
 - between ISO & GS-1 on Bar Code standards
 - between SDOs and CITEL PCC.I on NGN standards
- Inclusion of the User and needs of the Disabled
 - Security, protection and privacy

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