Net Neutrality and what it means for libraries

A presentation by ***Alex Guindon*** & ***Danielle Dennie***
Concordia University Libraries

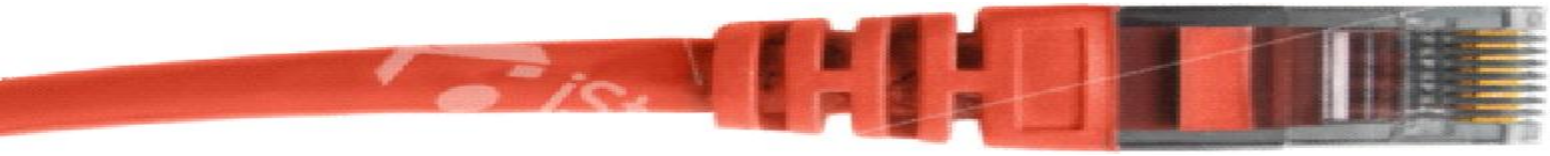
CLA/ACB 2009 National Conference and Trade Show, June 1, 2009

Introduction

- Net Neutrality is a complex issue that has legal, technological, economic and societal ramifications

- Debate polarized between an idealized vision of a neutral Internet and an approach favouring market solutions rather than non-discrimination legislation

Definition



- “Network neutrality is best defined as a network design principle. The idea is that a maximally useful public information network aspires to treat all content, sites, and platforms equally” (Tim Wu)

- This original Internet design is blind to the type of data, the type of application, the origin & destination of the transmitted information

Legal Framework

- The conception that communication and transport networks (like phone, telegraph, airlines, buses) should be neutral is based on the idea of common carriers
- “A common carrier is a private party offering transport or communication services which is subject to public duties in return for legal benefits” (Sandvig 2007)
- This is a Common Law notion going back to the 19th century

Common Carriers

Legal benefits:

- Liability protection (not responsible for illegal content transmitted)
- “Public right of way” to provide their services

Obligations:

- **Non-discrimination,** i.e. must carry all people (or content) indiscriminately
- Interconnection: must ensure inter-communicability between networks.
- Reasonable price for access

Current legislation

- In Canada, the *Telecommunications Act* applies to Internet communication

- Article 27(2) stipulates:
  "No Canadian carrier shall, in relation to the provision of a telecommunications service or the charging of a rate for it, unjustly discriminate or give an undue or unreasonable preference toward any person, including itself, or subject any person to an undue or unreasonable disadvantage."

- The CRTC has decided to intervene as little as possible in the area of retail Internet services

- Public hearings will be held in July

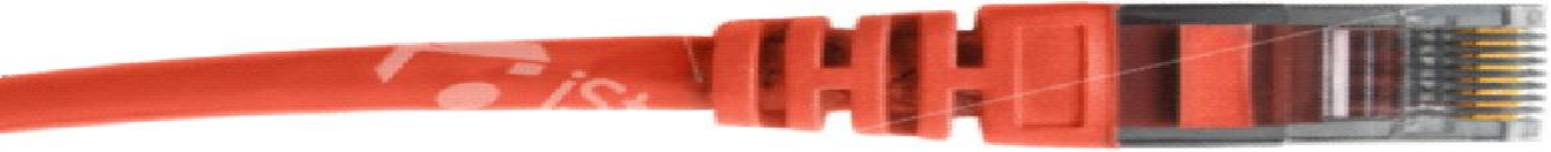
U.S. Legislation

- *Brand X* decision (2005):the Supreme Court confirmed the Federal Communications Commission (FCC) decision that cable companies are information services *and not* telecommunication services
- Two months later the FCC extended that statute to DSL networks (broadband) provided by telcos

As a result:

- Incumbents (telcos and cablecos) are not submitted to common carriage obligations
- Cable and phone companies are not obliged to share their *high-speed* network with competitors anymore

U.S. Legislation



To maintain some openness the FCC proposes these 4 policy principles:

1. Consumers are entitled to access the lawful Internet content of their choice
2. Consumers are entitled to run applications and services of their choice, subject to the needs of law enforcement
3. Consumers are entitled to connect their choice of legal devices that do not harm the network
4. Consumers are entitled to competition among network providers, application and service providers, and content providers.

But…

All of these principles are subject to *reasonable network management.*

Technological aspects

- Information on the Net is transmitted in the form of data packets
- In original design, the Internet (hardware and protocols (TCP/IP) is a “dumb network”: its function is to pass packets of data, via ‘‘pipes’’, along a chain of ‘‘nodes’’ until they reach their destination
- The nodes make no judgment on the data packets

FIFO and Best Effort principles

Packets are transmitted according to two principles:

1. **FIFO (first-in/first out):** “what comes in first is handled first, what comes in next waits until the first is finished, etc.”

2. **Best effort:** no guarantee that data is delivered, some packets are dropped. Speed depends on network traffic

Is the Net Neutral?

- Several authors claim (convincingly) that the Internet has not been really neutral for a long time
- Graham Longford presents 2 types of discrimination:
  1. Content discrimination
  2. Protocol and application discrimination (Network management)

Content discrimination

1. **Preferred content arrangements**
   Some content only accessible via specific ISPs
2. **Access tiering and transmission tariffs**
   ISPs want to apply additional charges to content providers and users for “faster lanes”
3. **Content blocking, Filtering and Deep Packet Inspection (DPI)**
   Blocking by address (source or destination) or by looking at actual content (DPI)
4. **Distributed Computing**
   Distributed network of local servers to cache high-demand pages. Some firms (Akamai) provide that service to content providers

Protocol and application discrimination

1. **Port blocking**
   In general, specific applications (email, Web, peer-to-peer) use specific ports. Blocking those ports, blocks these applications. Used to fight viruses.

2. **Traffic shaping/traffic prioritization**
   - Speed up latency sensitive applications (video, VoIP)
   - Slow down certain applications (throttling) which are considered bandwidth-hungry (peer-to-peer)

3. **Quality of service enhancements (QoS)**
   Additional fees for better service for specific apps (VoIP)

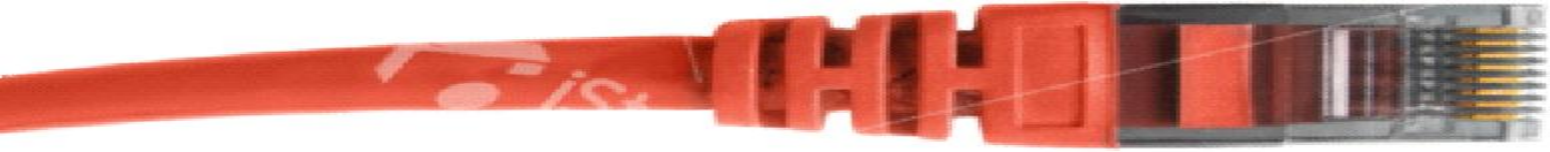
The Net Neutrality Debate

- Arguments for Net Neutrality
- Arguments against it
  (or for Net Diversity)
- A third way?

Arguments for Net Neutrality

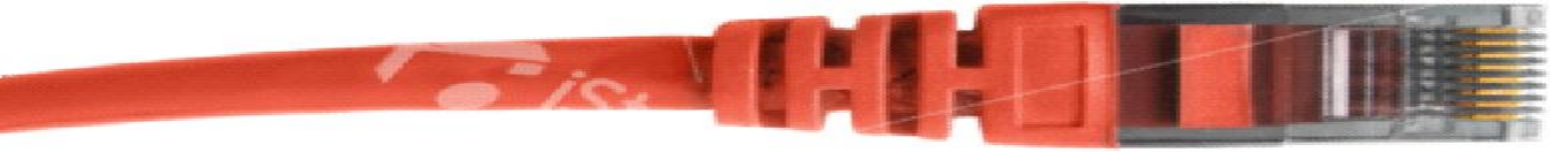
- Broadband Internet is an essential public utility. It's a major source of information, education and an important communication channel. It should be protected against all forms of discrimination and censorship
- In North America, infrastructure owners (incumbents) are in a quasi-monopoly situation
- Incumbents, by virtue of vertical integration, own contents and conduits. This leads to discrimination and is against common-carrier principles
- Incumbents do not divulge:
  - Precise information on available bandwidth
  - Information on traffic management techniques used

Arguments for Net Neutrality



- Innovation online is spurred by an open and neutral Net. All players (non-profits, startups, independent researchers) are on equal footing
- Innovation is more likely to come from small businesses or individuals than from large firms who can pay access to a fast lane
- Deep Packet Inspection is an infringement on the private life of citizens
- Traffic management is not efficient and ends up being more costly then investment in infrastructure
- Incumbent can artificially slow down traffic to convince consumers to pay more for Quality of Service arrangements

Arguments against Net Neutrality

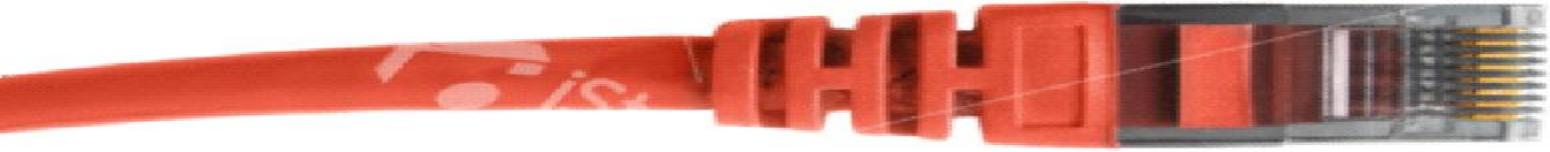


- Content providers (like Google and other big players) have a free ride: they benefit from the existing networks without having to pay for them
- Some discrimination is good:
  - To fight virus and security threats (port blocking, DPI)
  - So that low-latency applications can function properly (traffic prioritization, QoS)
  - Gives customers more flexibility in choice of services
- The original Net architecture is dated (or even obsolete) and needs to be adapted or rebuilt

Arguments against Net Neutrality

- Network innovation is best served by market solutions
- Legislation is inefficient and costly
- New income sources are needed for Network upgrade (investment in the “last-mile”)
- The end of guaranteed access to incumbent infrastructure is a strong incentive for innovation in last-mile access

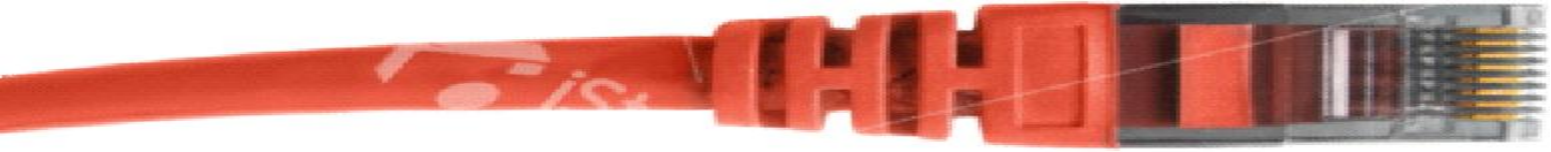
A Third Way?



- The Internet is not neutral now and has not been for quite some time
- It would be hard to go back to a purely neutral Net
- Not all discrimination is bad
- There is a need for network management
- No discrimination about the source or destination of data
- No discrimination against competitors or in favour of incumbents own content
- Infrastructure improvement will be very costly. Who will pay the bill and how?

Net Neutrality timeline in Canada

Net Neutrality timeline in Canada



May 2005

Shaw Communications institutes a $10 QoS charge for using third party VoIP

July 2005

Telus cuts subscriber access to pro-union website “Voices for Change”

December 2005

Rogers admits to traffic shaping (aka “throttling”) P2P traffic on its network

November 2007

Bell Sympatico admits to traffic shaping (aka “throttling”) P2P traffic on its retail network

Net Neutrality timeline in Canada

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Bell crimps P2P file-sharing during peak hours

Last Updated: Tuesday, March 25, 2008 | 6:10 PM ET Comments 87 Recommend 350
CBC News

Bell Canada is slowing down access on its Sympatico internet servers for users who file share during prime time to prevent them from clogging the network, a spokesman said Tuesday.

Bell began the process, which it calls managing the bandwidth capacity but which is widely known as "throttling," on March 14. The company plans to have it rolled out across the Sympatico service area — Quebec and Ontario — by April 7, spokesman Jason Laszlo said.

It will be in effect during the peak period for internet use in late afternoon and the evening, he said. For people sharing files, the system "will simply not work as fast." But other users will not be delayed.

Bell, like other internet service providers, says it has capacity problems caused by peer-to-peer (P2P) file-sharing systems such as BitTorrent, which can be used to download movies, music and games. "We're certainly not unique in this," Laszlo said, adding that other service providers are managing P2P downloads.

March

2008

Net Neutrality timeline in Canada

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Privacy and Security
Proactive Disclosure

2008-04-03 - #: 8622-C51-200805153 - Canadian Association of Internet Providers (CAIP) - Application requesting certain orders directing Bell Canada to cease and desist from throttling its wholesale ADSL Access Services

File using the On-line Services

2008-12-22 - Telecom Cost Order CRTC 2008-23 Determination of costs award with respect to the participation of the Campaign for Democratic Media in the proceeding initiated by the Canadian Association of Internet Providers' Part VII application
Reference: 8622-C51-200805153 and 4754-321

2008-12-22 - Telecom Cost Order CRTC 2008-24 Determination of costs award with respect to the participation of l'Union des consommateurs in the proceeding initiated by the Canadian Association of Internet Providers' Part VII application
Reference: 8622-C51-200805153 and 4754-322

2008-12-22 - Telecom Cost Order CRTC 2008-25 Determination of costs award with respect to the participation of the Public Interest Advocacy Centre in the proceeding initiated by the Canadian Association of Internet Providers' Part VII application
Reference: 8622-C51-200805153 and 4754-323

April

2008

Net Neutrality timeline in Canada

CAIP filing pointed to the following Telecommunications Act provisions

Section 7 (i) [Privacy]: It is hereby affirmed that telecommunications performs an essential role in the maintenance of Canada's identity and sovereignty and that the Canadian telecommunications policy has as its objectives (…)

(i) to contribute to the protection of the privacy of persons

Section 27 (2) [Unjust discrimination]: No Canadian carrier shall, in relation to the provision of a telecommunications service or the charging of a rate for it, unjustly discriminate or give an undue or unreasonable preference toward any person, including itself, or subject any person to an undue or unreasonable disadvantage.

Section 36 [Controlling content]: Except where the Commission approves otherwise, a Canadian carrier shall not control the content or influence the meaning or purpose of telecommunications carried by it for the public.

April

2008

Net Neutrality timeline in Canada

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Privacy and Security
Proactive Disclosure

Telecom Decision CRTC 2008-108

Ottawa, 20 November 2008

The Canadian Association of Internet Providers' application regarding Bell Canada's traffic shaping of its wholesale Gateway Access Service

Reference: 8622-C51-200805153

In this Decision, the Commission denies the Part VII application by the Canadian Association of Internet Providers requesting that the Commission order Bell Canada to cease and desist from traffic shaping of its wholesale Asymmetric Digital Subscriber Line services and, in particular, the wholesale service known as Gateway Access Service (GAS).

The Commission's determinations in this Decision relate solely to Bell Canada's traffic-shaping practices in relation to its wholesale GAS, and are based on the evidence filed in this proceeding.

November

2008

Net Neutrality timeline in Canada

Telecom Decision CRTC 2008-108

Section 27 (2) [Unjust discrimination]: «The Commission notes that Bell Canada's traffic-shaping measures are applied such that there is equivalent treatment for both its retail Internet service end-users and the [third-party] ISPs' end-users.»

Section 36 [Controlling content]: « [I]n the Commission's view, while the traffic shaping carried out by Bell Canada of telecommunications sent by P2P file-sharing applications involves controlling the speed of telecommunications, it does not involve controlling the content. »

Section 7 (i) [Privacy]: « There is no allegation by any party nor any evidence on the record of this proceeding that any of the examined header information is collected or disclosed by Bell Canada or used by Bell Canada for any purpose other than traffic shaping. No parties alleged that Bell Canada has collected, retained, or disclosed customer information in its ongoing application of its traffic-shaping measures. »

November

2008

Net Neutrality timeline in Canada

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Privacy and Security
Proactive Disclosure

Telecom Public Notice CRTC 2008-19

Additional reference: 2008-19-1, 2008-19-2, 2008-19-3

Ottawa, 20 November 2008

Notice of consultation and hearing

Review of the Internet traffic management practices of Internet service providers

Reference: 8646-C12-200815400

In this Public Notice, the Commission initiates a public proceeding to consider Internet traffic management practices for both wholesale and retail Internet services. The Commission invites detailed written comments, with supporting rationale, on the issues identified below. The proceeding will include an oral public hearing, which will begin on 6 July 2009 at the Conference Centre, Phase IV, 140 Promenade du Portage, Gatineau, Quebec.

November

2008

Net Neutrality timeline in the U.S.A.

Net Neutrality timeline in the U.S.A.

March 2002

FCC issues ruling declaring that cable modem services are an “information service”

June 2005

Brand X Decision: Supreme Court upholds FCC ruling. Cable ISPs remain "information services"

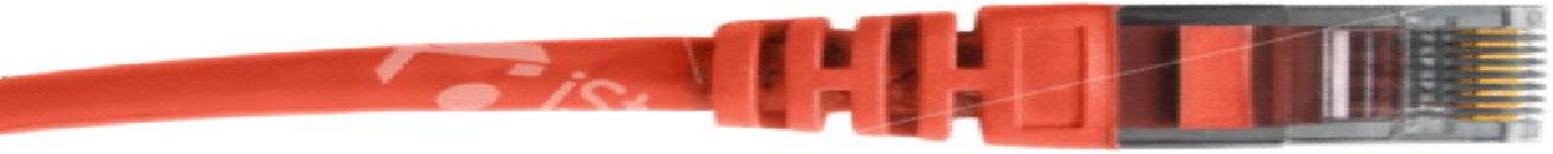
August 2005

FCC classifies all wireline broadband internet access services, including DSL, as information services

August 2005

FCC releases a Policy Statement outlining the four Internet Principles

Net Neutrality timeline in the U.S.A.



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Comcast blocks some Internet traffic

Tests confirm data discrimination by number 2 U.S. service provider

Jeff Chiu / AP

Matthew Elvey, a Comcast subscriber in the San Francisco area who has noticed BitTorrent uploads being stifled, acknowledged that the company has the right to manage its network, but said he disapproves of its method.

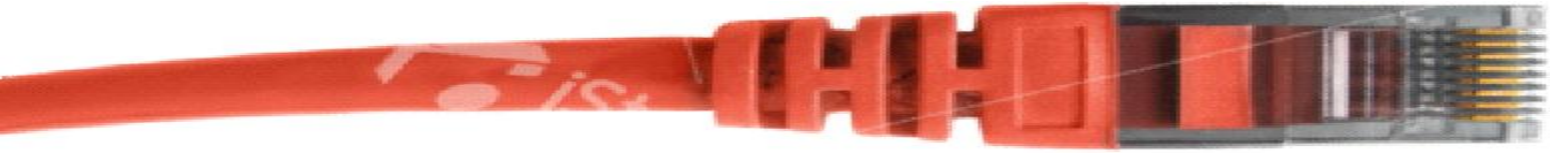
By Peter Svensson
Associated Press

MSN TECH AND GADGETS

October

2007

Net Neutrality timeline in the U.S.A.



Federal Communications Commission

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matters of	)	
	)	
Formal Complaint of Free Press and Public Knowledge Against Comcast Corporation for Secretly Degrading Peer-to-Peer Applications	)	File No. EB-08-IH-151
	)	
Broadband Industry Practices Petition of Free Press et al. for Declaratory Ruling that Degrading an Internet Application Violates the FCC's Internet Policy Statement and Does Not Meet an Exception for "Reasonable Network Management"	)	WC Docket No. 07-52

MEMORANDUM OPINION AND ORDER

Adopted: August 1, 2008 **Released: August 20, 2**

By the Commission: Chairman Martin and Commissioners Copps and Adelstein issuing separate statements; Commissioners Tate and McDowell dissenting and issuing separ statements.

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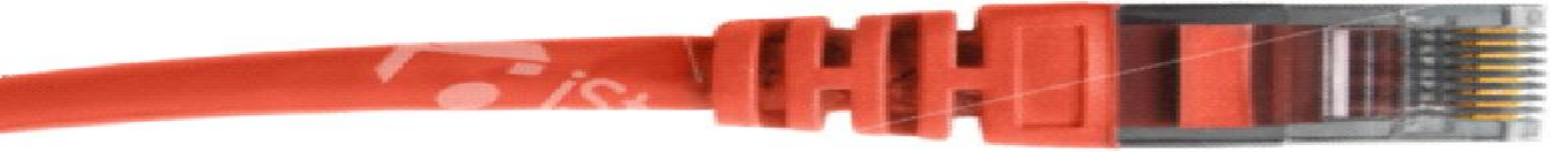
« The record leaves no doubt that Comcast's network management practices discriminate among applications and protocols rather than treating all equally. (...) [I]n laymen's terms, Comcast opens its customers' mail because it wants to deliver mail not based on the address or type of stamp on the envelope but on the type of letter contained therein. »

August

2008

Net Neutrality timeline in the U.S.A.



« A key reason the Internet has been such a success is because it is the most open network in history. It needs to stay that way. Barack Obama strongly supports the principle of network neutrality to preserve the benefits of open competition on the Internet. »

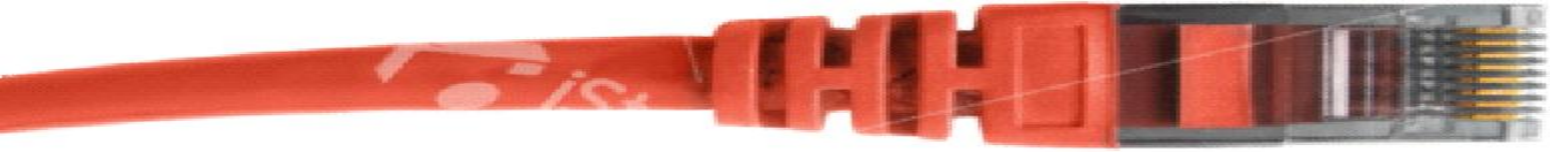
http://www.barackobama.com/issues/technology/index_campaign.php

November

2008

Shepard Fairey, 2008

Net Neutrality and libraries



Net Neutrality and libraries

Ideals protected in a world with net neutrality:

- Intellectual freedom and access to information in a knowledge society
- Protection of cultural diversity
- Privacy protection

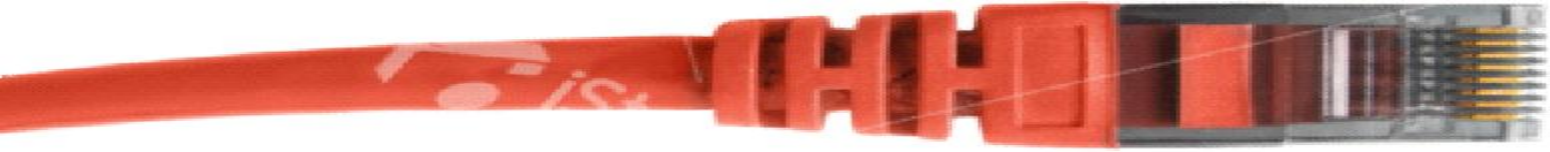
Net Neutrality and libraries

Intellectual freedom and access to information:

- “All persons in Canada have the fundamental right, as embodied in the nation’s Bill of Rights and the Canadian Charter of Rights and Freedoms, to have access to all expressions of knowledge, creativity and intellectual activity, and to express their thoughts publicly,” and “It is the responsibility of libraries to guarantee and facilitate access to all expressions of knowledge and intellectual activity” (CLA Statement on Intellectual Freedom)

- Blocking or throttling on University campuses: do we promote access to information and knowledge production?

Net Neutrality and libraries



Protecting cultural diversity

- UNESCO *Convention on the Protection and Promotion of the Diversity of Cultural Expressions:*
  - Goals:
    - protect and promote the diversity of cultural expressions
    - create the conditions for cultures to flourish and to freely interact in a mutually beneficial manner

Net Neutrality and libraries

Protecting cultural diversity

Documentary Organization of Canada (DOC) written submission to the CRTC's net neutrality hearings:

> « Many documentary filmmakers now routinely use BitTorrent (...) as part of a multi-distribution strategy to reach as broad an audience as possible – legally, openly and purposefully. Throttling of file sharing applications slows down file transfer speeds (...) and (...) can make it virtually impossible to transfer files through such applications (...). BitTorrent makes it affordable to distribute high quality digital video and enables filmmakers, especially smaller, emerging filmmakers with constrained budgets, to contribute to that marketplace. (...) DOC believes that ISPs are in an unsuitable place to make decisions regarding Internet content. »

Net Neutrality and libraries

Privacy protection

> « DPI technology has the capability to look into the content of messages sent over the Internet – enabling third parties to draw inferences about users' personal lives, interests, purchasing habits and other activities. » (Office of the Privacy Commissioner of Canada 2008)

> « Library users shall have the right to personal privacy and anonymity. Librarians and other library staff shall not disclose the identity of users or the materials they use to a third party. » (IFLAs Statement on Libraries and Intellectual Freedom)

Conclusion

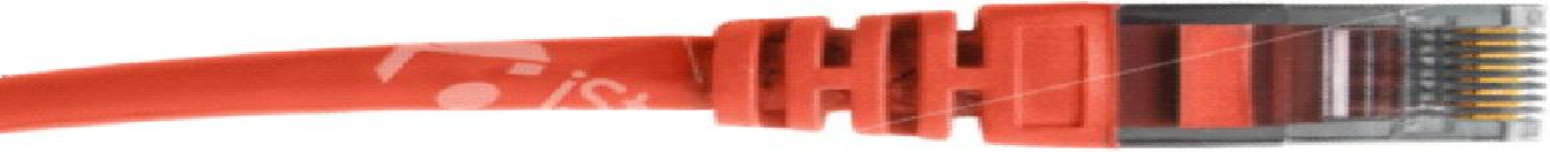
Conclusion

Is the Net an essential public utility? If so:

- It has to remain under public control
- Network operators cannot discriminate as they wish because:
  - They are also content owners (vertical integration)
  - There is a lack of competition (especially in North America)
  - They are not transparent about their traffic management practices

Conclusion

- There is a need for some form of regulation
- But the ideal of a purely Neutral Net is unpractical
- The legislation should be flexible and adapted to the current technological environment
- The legislation should be based on a normative framework that specifies what public duties the Net should serve (Sandvig 2007)
- ISPs should be transparent and accountable to public bodies
- Investment in last-mile architecture is needed and should be facilitated by governments
- New forms of last-mile management should be explored.



Thank you!

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