Network Neutrality and Harmful Discrimination

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Network Neutrality is a no-brainer, right?

- "This is that rare bird, a black and white issue, with large companies on one side and the vast majority of America on the other. Politicians will only oppose network neutrality so long as it stays in the darkest corners of debate."
  Evan Derkacz, http://alternet.org/blogs/peek/35728/

- "Predictably, the careerist politicians on the House Energy and Commerce Committee rolled right over in their frantic desire to do the telecoms' bidding," said Craig Fields, director of Internet operations for Gun Owners of America.
  "House Ignores Public, Sells Out the Internet" press release on savetheinternet.com

- "We cannot allow telecommunications companies to hijack the Internet. After all, the beauty of the Internet is its open architecture."
  Rep. Jay Inslee D-WA

- "But now, the cable and telco giants want to eliminate this open road in favor of a tollway that protects their status quo while stifling innovation. If they get their way, they'll shut down the free flow of information and dictate how you use the Internet forever."
  Free Press, http://www.freepress.net/netfreedom/=threat

Agenda

- Introduction and background
- Brief history of network neutrality
- The problem with codifying network neutrality
- Our proposal

The problem

- Can "harmful discrimination" be defined?
- Can it be identified?
- Is it OK that we accept current methods of discrimination?
- Can network operators use current technical mechanisms to discriminate in other ways that are "better" or "worse"?

- **Is it possible to ensure network neutrality without heavy-duty Title II-esque regulation?**

Summary of conclusions

- Difficult to distinguish between harmful and acceptable types of discrimination
  - Technological mechanisms and business policies can be used for good or bad
- Hard to enforce good behavior
  - Almost any problem can be justified
- Heavy regulation based on discrimination will likely fail to guarantee network neutrality
  - Operators will still get away with doing bad things
  - Operators will be limited in which good things they can do
- The best policy option (discussed in detail later):
  - go easy on legislation and regulation (for now)
  - credible threat of heavy regulation
  - watch network operators closely

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The Computer Inquiries and the Communications Act of 1996

- FCC began examining the relationship between communications and computer processing in the 1960s
  - Common carriers were offering services that were competitive with those offered by non-regulated entities
  - Non-regulated entities were dependent on the common carriers
- How should computers and data processing be handled by the Commission?

- Tried to establish distinctions based on the market in which the technology was used

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1966: Computer I
"Communications": regulated
"Data processing": unregulated
"Hybrids": case-by-case

1976: Computer II
"Basic services": Title II
"Enhanced services": Title I

1996: Communications Act
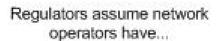"Telecommunications service": Title II
"Information service": Title I

Classifying Broadband Access Providers

- *Computer II* common carrier obligation did not apply to cable modem service providers
- *NCTA v. Brand X* (June 2005): Supreme Court upheld FCC's classification of cable modem service as an "information service"
- Wireline Broadband Order (August 2005): FCC declines to impose "any Computer Inquiry requirements on facilities-based carriers in their provision of wireline broadband Internet access service"

Broadband Internet access providers are no longer subject to Title II and common carriage obligations.

Stakeholders' Concerns

- Network backbone providers
- Academic community

Regulators assume network operators have...

	Limited market power	Too much market power
Limited market power (Stakeholders believe network operators have...)	• Innovation in content and applications • Network operators discriminate based on cost • Infrastructure investments occur due to competitive pressure	• Innovation in content and applications • Potential for inefficient discrimination since allowable discrimination regulated • Limited investment in infrastructure
Too much market power	• Limited innovation in content and applications • Network operators discriminate for financial gain • Limited incentive to invest in infrastructure	• Innovation in content and applications • Potential for inefficient discrimination since allowable discrimination regulated • Guaranteed returns on network upgrades

No legislation required

Legislation required

- Content and application providers
- Academic community and advocacy groups

Defining Network Neutrality

- Confusion between the end and the means
- "A principle of network operational architecture where the network is operated under the three principles of neutrality: *non-discrimination*, *interconnection*, and *access*"
- Wu identifies multiple means to achieve this objective
  - Open access (structural remedy)
  - Network neutrality legislation (non-discrimination regime)

- Is network neutrality legislation required?
  - Economic arguments (Farrell and Weiser, Van Schewick, Owens)
    - Do broadband providers have the incentive to discriminate against higher layer services?
    - How competitive is the market?
    - Should network operators be allowed to discriminate?
- **Can network neutrality be codified?**

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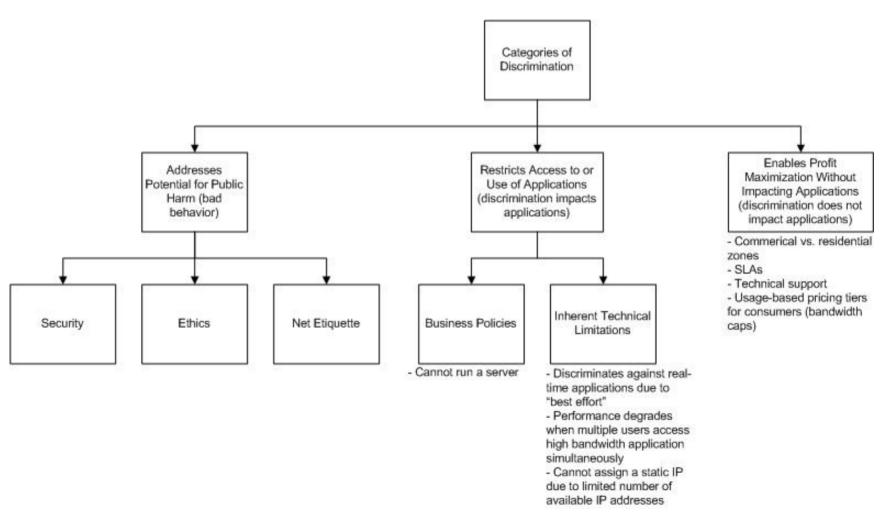- Our proposal

The Internet is not neutral today

The SavetheInternet.com Coalition

'From its beginnings, the Internet has leveled the playing field for all comers. Everyday people can have their voices heard by thousands, even millions of people.'

- Technical limitations of usage
  - Asymmetric bandwidth
  - Real time applications
  - Locality makes a difference (cf. Akamai)
- Contractual limitations of usage
  - No operating a server
  - No home networking
  - No commercial use
  - No overuse of bandwidth
  - No resale of bandwidth

Is it possible to classify discrimination?

Categories of Discrimination

- Addresses Potential for Public Harm (bad behavior)
  - Security
  - Ethics
  - Net Etiquette

- Restricts Access to or Use of Applications (discrimination impacts applications)
  - Business Policies
    - Cannot run a server
  - Inherent Technical Limitations
    - Discriminates against real-time applications due to "best effort"
    - Performance degrades when multiple users access high bandwidth application simultaneously
    - Cannot assign a static IP due to limited number of available IP addresses

- Enables Profit Maximization Without Impacting Applications (discrimination does not impact applications)
  - Commerical vs. residential zones
  - SLAs
  - Technical support
  - Usage-based pricing tiers for consumers (bandwidth caps)

Difficult to distinguish harmful discrimination from acceptable

- Technological mechanisms can be used for good or bad
  - Examples:
    - Prioritizing real-time applications
    - Collocation servers
    - Blocking port 25 (SMTP) in the name of spam
    - Peering with certain parties

- Business policies may or may not be based on underlying costs
  - Examples:
    - No servers allowed
    - No P2P allowed

Hard to enforce good behavior

- Problems can have multiple causes
  - Example with H.R. 5273: Markey's Network Neutrality Act of 2006, 4(a)(2)(A):

    "Each broadband network provider has the duty to not block, impair, degrade, discriminate against, or interfere with the ability of any person to utilize their broadband service to access, use, send, receive, or offer lawful content, applications, or services over broadband networks, including the Internet"

    - High jitter: Artificially introduced, or due to unavoidable congestion?
    - Certain web sites are slow: Did the ISP maliciously choose to delay the upgrade of a certain link, or is the upgrade currently impractical?
    - Slow upload speeds: Is the ISP trying to prevent users from publishing content that competes with their own, or is it technically difficult to provide high upload speeds to home users?

- Almost every problem can be justified by a legitimate technological excuse

Policy based on discrimination will not guarantee network neutrality

- Operators will still get away with doing bad things
  - Blame problems on finite resources
  - Blame problems on "that's the way the Internet works"
- Operators will be limited in which good things they can do
  - Not allowed to take advantage of the network they built
    - e.g., no exclusive ability to place servers close to users
  - Not allowed to cater the network to a certain class of users (to differentiate from competitors)
  - Operators may be forced to devote attention to addressing petty complaints of discrimination at the expense of overall network innovation
  - Environment of "not allowed unless specifically permitted" instead of "permitted unless specifically not allowed"

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Our proposal (1):

- Go easy on legislation and regulation (for now)
  - Leverage existing antitrust and fraud laws
  - Give the FCC limited authority to enforce general network neutrality principles
    - FCC's Broadband Policy Statement is a good start (more about this in a minute...)
  - FCC's authority limited to adjudicating complaints only (no creating rules or regulations)
    - Burden of proof on the network operators
    - Go case-by-case
  - This is similar to the structure of the COPE act (H.R.5252)

Our proposal (1):

- Network neutrality principles
  - Consumers are entitled to:
    - **access** the lawful Internet content of their choice
    - **run applications and use services** of their choice, subject to the needs of law enforcement
    - **connect** their choice of legal devices that do not harm the network
    - **competition** among network providers, application and service providers, and content providers
    - meaningful **service plan information**
      - Want ISPs to publish what they are doing (to keep them honest)
      - Granularity: application performance limits should be anticipatable
    - reasonable **service plan choices**
      - Let advanced users have a minimally invasive provider
      - Let casual users adopt "value added" services such as content filtering and security protection

Our proposal (2):

- Threaten heavy regulation
  - Force Congress to revisit the net neutrality principles and the FCC's authority by sunsetting net neutrality laws
    - If the light regulation is effective, Congress can simply extend the sunset date
    - If light regulation is unsuccessful, Congress must write new laws or face anarchy when the expiration date rolls around

Our proposal (3):

- Watch network operators closely
  - Conduct regular subscriber surveys
  - FCC regularly reports the health of the Internet to Congress:
    - the state of investment and competition
    - the number and nature of complaints
    - significant technological developments
    - recommendations for change
    - etc.

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Any questions?