



Content Regulation and The *Net Neutrality* Debate

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Quotes on Net Neutrality

Allowing broadband carriers to control what people see and do online would fundamentally undermine the principles that have made the Internet such a success... "

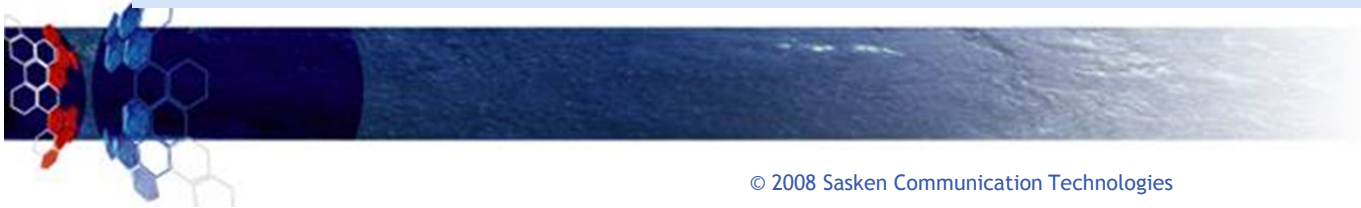
- [Vint Cerf](#)

Google Chief Internet Evangelist and Co-Developer of the Internet Protocol

The neutral communications medium is essential to our society. It is the basis of a fair competitive market economy. It is the basis of democracy, by which a community should decide what to do. It is the basis of science, by which humankind should decide what is true. **Let us protect the neutrality of the net."**

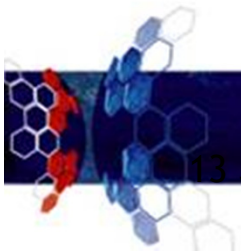
- [Tim Berners-Lee](#)

Inventor of the World Wide Web



Usage and Technologies of Wireless Broadband

- Usage: Voice => Data, video, multimedia
- Access and Core network
 - Packet switching based
 - Shared use of network resources
 - Statistical multiplexing of traffic; no dedicated end-to-end circuit
 - TCP/IP based: connectionless “best effort” protocol
- Content and Network Access complement each other and hence create *Network Externalities*



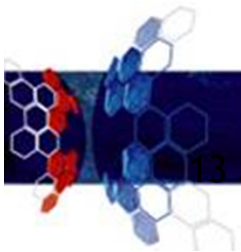
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Network Neutrality

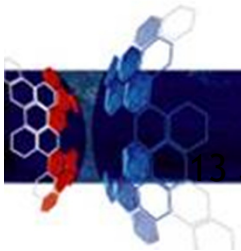
- **Network neutrality is a principle that says those who operate networks which provide an overall benefit to the public good and rely on public property should not use their ownership to confer “discriminatory” treatment amongst their customers.**



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Congestion Problems

- Problem of Commons
 - When villagers have shared, unlimited access to a common grazing field, each will graze his cows without recognizing the costs imposed on the others
- With limited spectrum (paltry 5 MHz for 3G), and more content providers, the above problem is likely to occur
- Imposes external social costs
 - A send messages that crowds out B's messages; B suffers delay; But A does not for the cost (delay) she imposes on B
- Does this need control of bandwidth usage by carriers?



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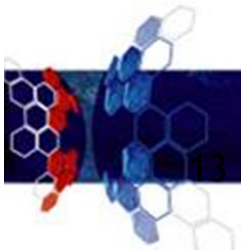
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Congestion Control

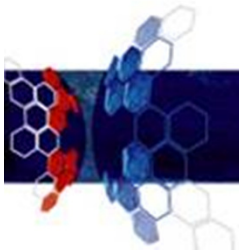
- Models for congestion control in a bandwidth constrained environment
 - Differentiated pricing models: For both the user and the content provider
 - During periods of congestion, bandwidth is scarce resource and hence should be charged
 - When the network is not congested, the marginal cost of transporting additional packet is essentially zero
 - Priority based blockage of certain types of content over others
 - DiffServe, Deep Packet Inspection
 - Increase the available bandwidth: improve spectral efficiency, data communications efficiency



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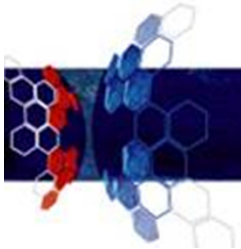
Examples

- **2005: Madison River Communications**, a Broadband Service Provider in North Carolina in the US blocked Vonage's Internet Telephony service
- **2007: ComCast**, the Cable Broadband Access Provider in the US restricted certain peer-peer applications to be used on its network
- **2009: AT&T**, AT&T allowed **SlingPlayer Mobile** to stream IP based video broadcast over Wi-Fi networks not on its 3G network
- **2010: Skype**, another victim, had to restrict its cheap and almost free Internet Telephony application designed for iPhone, to work on the public Wi-Fi network; but not on AT&T's 3G wireless data connection.



Recent FCC Rulings on 21 Dec 2010

- Two classes of services are considered
 - (i) Fixed Wire-line and (ii) wireless broadband service
- Rule 1: Service providers should be transparent about management of their networks and services
- Rule 2: Blocking of Internet traffic
 - For fixed wireline networks, operators cannot block any lawful content, services, applications, or devices on their network.
 - Wireless providers are also prohibited from blocking Web sites, but the rule is slightly more lenient when it comes to blocking applications and services.
- Rule 3: Prohibits fixed wireline broadband providers from unreasonably discriminating against traffic on their network.



What do Proponents Demand?

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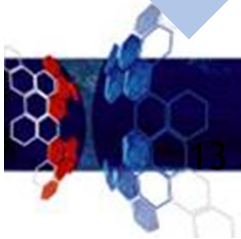
- **Prohibition against blockage of content or applications - “Internet Freedoms”**
- Internet access providers not to deny the end-user access to any lawful content

2

- **Prohibition on a practice called - “Access Tiering”**
- Different tiers of pricing would reflect different levels of quality of service

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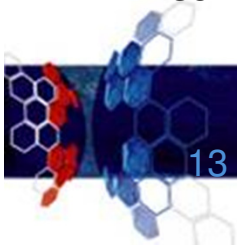
- **Restrict or constrain the ability of network operators to integrate vertically into the production of content or applications**



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Regulatory Questions?

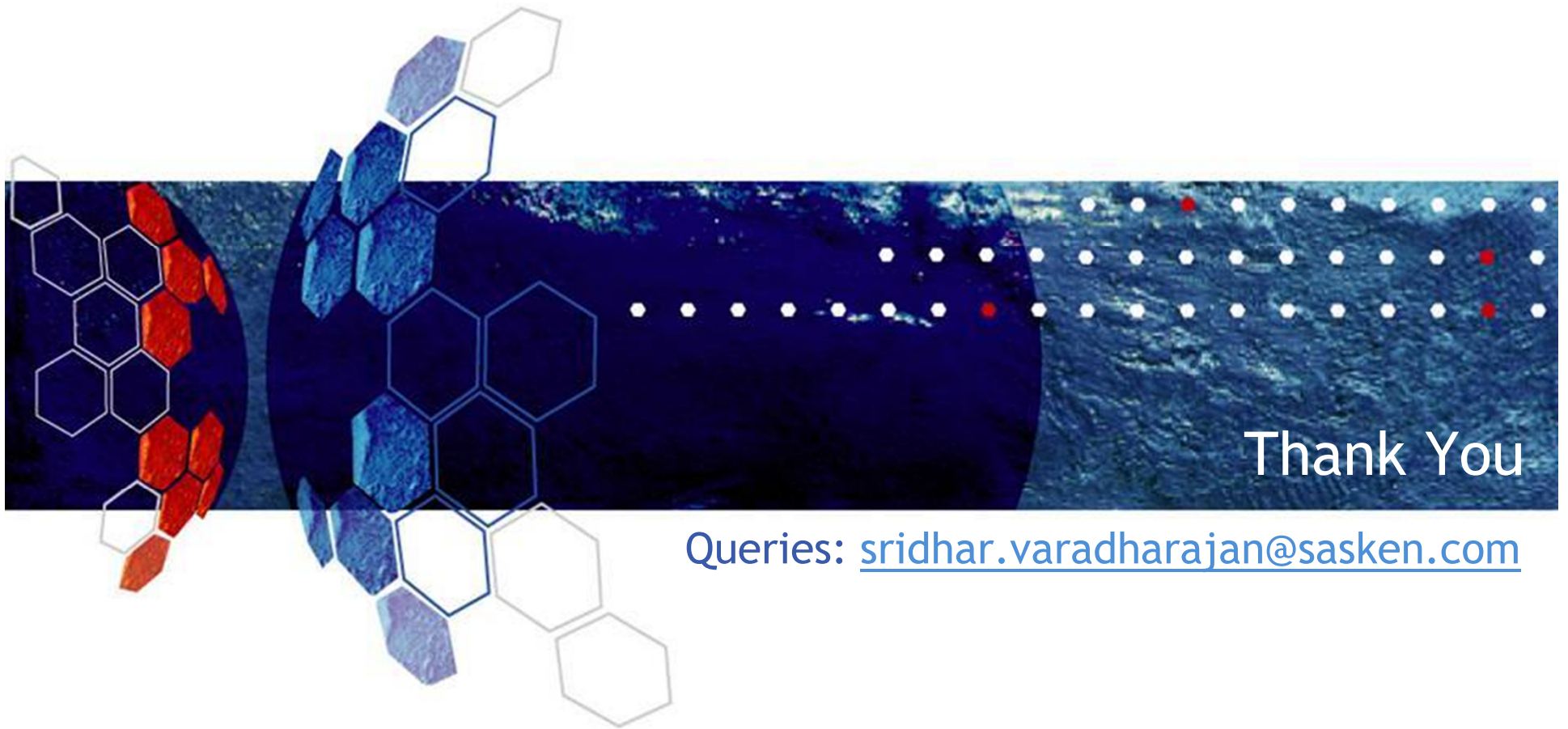
- Ex-Ante or Ex-Poste
 - If Ex-poste what are the rules?
 - Promote interest of consumers and innovation
 - Burden of proof on the challenger of a practice
 - Protect consumers, not incumbents
- Pricing: Tariff regulation for content or market forbearance
 - Floor on revenue sharing between broadband service provider and content provider
- Prioritization: Should we adopt ex-ante or ex-poste
 - Should we allow access tiering?
- Mergers and acquisitions
 - Should we have norms of M&A between broadband wireless provider and Extending MVAS regulation
 - content/ service provider



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Thank You

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