Network Neutrality: Implications for Europe

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Network Neutrality: Implications for Europe

• What is meant by Network Neutrality?

• What are the economic implications?

• Why has it emerged as an issue at this particular time, and why has the debate been so much sharper in the U.S. than in Europe?

• What policy initiatives have been attempted in the U.S., with what effect?

• What are the implications for European policymakers?
  - What tools are available to European regulators?
  - What should European regulators be doing?

• What about the emerging issue of wireless network neutrality?
What is meant by “Network Neutrality”?

- Network neutrality means different things to different people:
  - The possibility that an integrated ISP might offer better performance to some Internet sites than to others;
  - The possibility that an integrated ISP might assess a surcharge where a customer wants to reach certain Internet sites with better-than-standard performance;
  - The fear that the integrated ISP might permit access only to affiliated sites, and block access to unaffiliated sites;
  - The fear that the integrated ISP might assess supracompetitive surcharges for the use of certain applications, or of certain devices;
  - The fear that the integrated ISP might disallow outright the use of certain applications, or of certain devices, especially where those applications or devices compete with services that the integrated ISP itself offers and for which it charges; and
  - The fear that the integrated ISP might erect “tollgates” in order to collect unwarranted charges from unaffiliated content providers who need to reach the integrated ISP’s customers.
What is meant by “Network Neutrality”? 

“The chief executive of AT&T, Edward Whitacre, told Business Week last year that his company (then called SBC Communications) wanted some way to charge major Internet concerns like Google and Vonage for the bandwidth they use. "What they would like to do is use my pipes free, but I ain't going to let them do that because we have spent this capital and we have to have a return on it," he said.”

_NY Times_, March 8, 2006
What are the economic implications?

• Many of the concerns that have been raised (e.g. by Lessig and Wu) in regard to network neutrality relate to behaviors that, *in the absence of market power*, would tend to *enhance* consumer welfare.
  - Some would appear to represent legitimate *price discrimination*.
  - Others enforce the economic property of *excludability* (the ability to prevent someone from using a service that he did not pay for) in support of price discrimination.
  - In a competitive market, these practices would be entirely appropriate.

• Other violations of network neutrality, however, could imply some form of economic *foreclosure* (the attempt to project market power into a vertically related market segment that would otherwise be competitive), which should be viewed as being anticompetitive.
What are the economic implications?

- Many U.S. scholars view deviations from network neutrality as merely a potential threat going forward.

- Others experts (especially Lessig and Wu) have argued that current U.S. practices already systematically violate network neutrality:
  - Charging extra for a static IP address.
  - Cable access agreements that restrict the duration for which third party IPTV can be provided.
  - Restrictions on encryption (VPN) over broadband Internet access, unless the consumer subscribes to more expensive (“business”) service.
Why now? Why in the U.S.?

- Why hasn’t the lack of network neutrality regulation already led to massive problems in the US?
  - Violations have been technically feasible for ten years or more.
  - Telecommunications firms in the US were not permitted to discriminate (prior to 2005), but cable operators were unrestricted.
  - Commercial forces may contain discrimination when:
    • Customers are well informed.
    • Customers have competitive alternatives.
    • Switching costs are not prohibitive.

- The problem has heated up in the US primarily due to the decline of competitive broadband alternatives for consumers.
Three simultaneous developments: a “perfect storm”.

1. Collapse of the U.S. wholesale broadband Internet access market; consolidation into a series of non-overlapping geographically distinct duopolies.

2. Increasing industry concentration, including mega-mergers where only minimal undertakings were imposed on the parties:
   - SBC/AT&T
   - Verizon/MCI
   - AT&T/Bellsouth

3. FCC withdrawal of regulation, including traditional obligations of nondiscrimination, with no economic analysis and no consideration of the implications of possible market power.
What percentage of DSL lines (with at least 200 Kb/s in both directions) are provided by competitors?

As of December 2006: 3.1% of DSL lines are provided by competitors.

Source: FCC reports based on Form 477 carrier data
Europe: Wholesale third party DSL access

U.S. – EU Comparison: DSL Lines

Source: European Commission 12th Implementation Report

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The Netherlands broadband market

The Netherlands Broadband Marketplace

- Incumbent: 45%
- ULL: 2%
- Shared Access: 37%
- Bitstream: 0%
- Resale: 0%
- Cable: 11%
- Other: 5%

The French broadband market

The French Broadband Marketplace

The duopolistic U.S. broadband market

US Residential Broadband
(at least 200Kbps both directions, December 2006)

- DSL: 35%
- FTTx: 58%
- Cable: 1%
- Other wired: 0%
- Satellite and fixed wireless: 5%
- Mobile (dubious): 1%

Derived from data from FCC reports based on Form 477 carrier data
Why now? Why in the U.S.?

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Series of mega-mergers

- A series of mega-mergers:
  - Cingular / AT&T Wireless
  - SBC / AT&T
  - Verizon / MCI
  - AT&T / BellSouth

- No significant undertakings required.

- Strong tendency toward local geographically specific duopolies.
  - One significant telecoms firm in each geographic market.
  - One cable operator in each geographic market.

- A marked tilt in the character of the public debate.
  - Very few large electronic communications firms remain other than those that arguably have wired last mile SMP.
  - Very little procompetitive funding remains for research or lobbying.
FCC Withdrawal of Procompetitive Regulation

• Pre-2002 US outcomes (regulation applied only to firms that possess SMP):
  - Competitive Carrier proceeding (1980)
  - Telecommunications Act of 1996 - sections 251 and 271
  - Rates for Cable Services

• Post-2002 US outcomes that diverge from previous US practice and from current European practice (deregulation without adequate consideration of market power):
  - Effective permanent exemption from SMP remedies for cable modem service and for DSL when integrated with Internet access.
  - Elimination of wholesale and nondiscrimination obligations for wired broadband Internet access.
  - No obligation to unbundle Fiber to home or MDU.
  - Elimination of shared access (line sharing) for DSL.
What policy measures might be effective?

- Madison River consent decree
- FCC “Broadband Policy Statement” of September, 2005
- Attempted legislative fixes
- AT&T BellSouth merger conditions – prevents substantial changes for prior practice for up to 30 months after the merger completed.
- Spectrum auction rules in the 700 MHz band
Madison River Consent Decree

- In March, 2005, the FCC investigated “… allegations that Madison River was blocking ports used for VoIP applications, thereby affecting customers’ ability to use VoIP through one or more VoIP service providers.”

- The practice could be viewed as anticompetitive, effectively a form of economic foreclosure.

- Madison River agreed to discontinue the practice, and to pay a small fine.

- Enforcement actions are generally suitable where a firm has “willfully” violated some rule. In this case, since where was no rule, it is difficult to understand how the violation (whatever it was) could have been willful.
Madison River Consent Decree

• This well-meaning order could be viewed as a valuable “shot across the bow”, but it leaves a confused legacy.

• The consent decree did not unambiguously identify the source of statutory authority. The primary source mentioned in the order, section 201 of the Communications Act, would probably not be applicable today due to subsequent FCC deregulatory measures.

• The order fails to identify why Madison River’s actions were a violation, nor to distinguish acceptable behavior from unacceptable. Those who drafted the order at the FCC clearly did not understand the difference.

• In the nature of a consent decree, the matter was closed. These questions will remain unanswered.
“... to ensure that broadband networks are widely deployed, open, affordable, and accessible to all consumers, the Commission adopts the following principles:

• ... consumers are entitled to access the lawful Internet content of their choice.

• ... consumers are entitled to run applications and use services of their choice, subject to the needs of law enforcement.

• ... consumers are entitled to connect their choice of legal devices that do not harm the network.

• ... consumers are entitled to competition among network providers, application and service providers, and content providers.”
FCC “Broadband Policy Statement”

• A commendable statement of principles. But what does it mean?
  - No specific rules were adopted.
  - No enforcement mechanisms were identified.

• It is not clear that the FCC fully understands the inherent tensions and ambiguities in these principles, nor is it clear that it has the ability to craft meaningful rules to properly address them.

• A Policy Statement reflects current views of the Commissioners. Two of the five FCC Commissioners are new. Will their votes on future proceedings be the same as those of the commissioners who signed the Policy Statement? What happens when the next Commissioner is appointed?
“AT&T/BellSouth also commits … not to provide or to sell to Internet content, application, or service providers, including those affiliated with AT&T/BellSouth, any service that privileges, degrades or prioritizes any packet transmitted over AT&T/BellSouth's wireline broadband Internet access service based on its source, ownership or destination.”

• Carve-outs for enterprise customers, VPNs, IPTV.

• The commitment sunsets 24 months after closing of the merger (thus at the end of 2008).
What U.S. policy initiatives might be effective?

• It would be very difficult to craft meaningful *detailed* rules to enforce network neutrality.
  - Difficult or impossible to distinguish between welfare-enhancing discrimination versus anticompetitive discrimination.
  - Lack of sophistication on the part of decision makers would inevitably lead to subjective and imprudent decisions.

• Political economy problems
  - Large firms with SMP have vastly more lobbying dollars than U.S. consumer advocates.
  - Substantial risk of legislative/regulatory capture.

• Once marketplace competition erodes to the point where regulation is necessary, all of the choices tend to be unattractive.
What policy initiatives might be effective here?

- Europe today enjoys a far more competitive broadband market than does the United States.
  - On the average, nearly half of all retail DSL lines in Europe are provided by competitive entrants.
  - Most consumers have access to more than two providers.
  - For these purposes, service-based competition is sufficient.
- The first line of defense for European policymakers should be to avoid the problem altogether by maintaining the competitiveness of the underlying markets.
What policy initiatives might be effective here?

- European regulators have a wide range of tools available:
  - Nondiscrimination obligations imposed on operators with SMP.
  - Obligations on providers of publicly available ECS to inform the public about their Quality of Service pursuant to Articles 20 and 22 of the Universal Service Directive (USD).
  - Obligations imposed under Article 5 of the Access and Interconnection Directive (AID).
  - Ability of NRAs to require a minimum IP Quality of Service (pursuant to the Commission’s 13 November documents).
  - Occasional or sporadic problems related to network neutrality might be addressed *ex post* through the exercise of competition law.
Wireless Network Neutrality

- An issue that has been raised only in the past year in the U.S, especially by Tim Wu (Columbia).

- Concerns over allegedly excessive control exercised by mobile operators in the U.S. include:
  - Mobile operators support only a limited selection of devices on their networks.
  - Some handset features are crippled by the mobile operators.
  - Some features are not developed, even though potentially valuable to consumers, because the mobile operators do not want them.
  - Broadband services are restricted, both in terms of bandwidth (e.g. P2P) and of competing applications (e.g. VoIP).
  - Barriers to entry for mobile application developers are claimed to be high due to restrictions imposed by the mobile operators.
Wireless Network Neutrality

• The composition of the U.S. mobile market is different from that of Europe.
  - Technological diversity, although GSM is significant (about 45%).
  - This implies diseconomies of scale, and also lack of uniform technical standards, for application developers.
  - US CDMA phones have no SIMs – they are truly locked.
• The U.S. economic environment for mobile phones is also different from that of Europe in many ways.
  - Mobile termination fees are much lower than in Europe (for calls from fixed or mobile), and are often zero.
  - Service-based revenue per minute is much lower than in Europe, and about four times lower than in Germany (Merrill Lynch 4Q05).
  - ARPU in the U.S. is higher than in Europe, and about 2.5 times higher than in Germany (Merrill Lynch data 4Q2005).
  - Handset subsidies tend to be much smaller in the U.S.
Wireless Network Neutrality

• In interviews, some European mobile operators assert that customers already have full choice as regards handsets, and that they are providing (or expect to provide) full flexibility as regards applications running in handsets.

• The reality seems to be more complex – we understand that some mobile operators disable WiFi and/or VoIP capabilities. For the U.S., Wu documents many specific instances.

• Mobile operators on both sides of the Atlantic might be tempted to impede VoIP as a form of foreclosure.

• Mobile operators probably have many ways to restrict customers if they choose to, some blatant, some more subtle.
Wireless Network Neutrality

There are many ways for mobile operators to discourage competitive alternatives such as VoIP – e.g. handset subsidies coupled with handset restrictions; packet filtering; and pricing schemes.

“I have a cell phone. It uses around 14kbps to carry voice, and provides a global service which is extremely pervasive and affordable. Indeed, there are more cell phones than Internet Hosts (2.5 billion active mobile phone numbers in the world at the time of writing). My cell phone provides data (GPRS, EDGE and 3G as it happens). The 3G service runs at around 384kbps in the UK, and seems to have pretty low latency -- I do not know the architecture of the backhaul network once the wireless segment of a route is terminated, but it seems to support pretty close to zero loss. I can run Skype or any vanilla VoIP system on this fairly easily. However, the volume and time tariff of the data service is set such that a normal pattern of voice calls made over it would cost more than the GSM service. This is fairly surreal (in fact, usually when I read my e-mail via my phone, I 'dial-up' over GSM as it is cheaper), but you can see that there are powerful reasons for the cellular network providers to stay in this regime for a while, or else have to explain a massive loss of revenue to their shareholders. The key lesson here is that legacy service providers resist the pressure to become merely bit pipes.”

Wireless Network Neutrality

- Wu advocates four policy initiatives:
  1. A “Carterphone” rule to allow consumers to attach any safe mobile device.
  2. A network neutrality obligation to ensure that consumers can run any application and view any content they choose.
  3. Full disclosure of any limitations on the service.
  4. Standardization of application development platforms.

- The first is largely already in effect in Europe.

- The third is consistent with Article 22 of the USD.

- The fourth is arguably happening in Europe in the form of IMS. Whether this will help or harm consumers remains unclear.
“[T]he FCC determined that licensees for one of the spectrum blocks to be auctioned – the large, 22-megahertz Upper 700 MHz C Block – will be required to provide a platform that is more open to devices and applications. These licensees will be required to allow customers, device manufacturers, third-party application developers, and others to use any device or application of their choice on their networks in this band, subject to certain conditions.”

FCC Press Release on 700 MHz rules, 31 July 2007
Wireless Network Neutrality

• Are the restrictions on the 22 MHz upper portion of the 700 MHz band a good idea?

• In general, one should strive to avoid imposing arbitrary conditions on spectrum auctions – it potentially distorts the outcome.

• In the context of the problematic U.S. broadband market environment, this measure may have been preferable to alternatives as a means of creating a test bed for network neutrality.

• Whether such an approach makes sense in Europe is not clear. The problem of wireless network neutrality is different in Europe than in the United States – better in some ways but worse in others.
Wireless Network Neutrality

“Verizon Wireless today announced that it will provide customers the option to use, on its nationwide wireless network, wireless devices, software and applications not offered by the company. Verizon Wireless plans to have this new choice available to customers throughout the country by the end of 2008.

In early 2008, the company will publish the technical standards the development community will need to design products to interface with the Verizon Wireless network. Any device that meets the minimum technical standard will be activated on the network. Devices will be tested and approved in a … testing lab … Any application the customer chooses will be allowed on these devices.”

- Press Release, 27 November 2007

• An interesting and promising development!
Conclusions

• Network Neutrality is an issue here, just as it is in the U.S.

• It will however, play out differently in Europe, for two reasons:
  - A more robustly competitive broadband market in Europe.
  - A richer toolkit of regulatory remedies in Europe.

• Wireless network neutrality also has a different dimension in Europe than in the U.S.
  - Profound differences in retail and wholesale arrangements.
  - The U.S. market is less homogeneous than that of Europe at a technical level (GSM and CDMA).
  - Wireless network neutrality might emerge as a just as intense an issue in Europe as in the U.S.