

# **U.S. Experiences with Business Separation in Telecommunications**

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## I. Introduction

Telecommunications regulators and policy makers in many countries are considering issues arising from vertical separation of incumbent telecommunications providers. For example, the telecommunications regulator in the United Kingdom, Ofcom, recently adopted regulations that require BT to functionally separate wholesale network services from retail services. (Blowers, 2007) A primary motive for separating lines of business is to limit the ability of an operator that controls bottleneck facilities<sup>1</sup> to use that control to discriminate against rivals in competitive or potentially competitive markets. (Fowler et al., 1986; Laffont, 2005, pp. 10-11) This was the central motivation of the United States when it broke up AT&T<sup>2</sup> in 1982 and of Ofcom when it adopted functional separation for BT in 2006. The experience of separation approaches in the United States over the last 25 years, which we examine in this paper, can usefully shed some light on what the outcomes of the more recent efforts at separation around the world might be.<sup>3</sup>

There are four basic approaches to separating competitive or potentially competitive services from what apparently appear to be non-competitive operations. The most severe approach is ownership separation, which would include divestiture and line of business prohibitions to prevent reintegration. The breakup of AT&T was an example of a divestiture and the prohibition on the divested Regional Bell Operating Companies (RBOCs) from entering into the interLATA long distance<sup>4</sup> market was an example

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<sup>1</sup> A bottleneck facility is “a point on a network through which all service products must pass to reach the ultimate buyers.” (Source: Regulation Body of Knowledge, <http://www.regulationbodyofknowledge.org/glossary/define/Bottleneck%20facility/>. Parenthetical omitted.)

<sup>2</sup> In 1982, the Antitrust Division of the U.S. Department of Justice and AT&T agreed to enter into a consent decree to settle the Government's antitrust suit against AT&T. This decree would among other things cause AT&T to divest its ownership of the Bell Operating Companies, through which AT&T owned local access facilities. See United States v. Western Electric Co., 552 F. Supp. 131 (D.D.C. 1982) (Modification of Final Judgment or MFJ), aff'd sub nom. Maryland v. United States, 460 U.S. 1001 (1983) (approving MFJ); United States v. AT&T, 569 F. Supp. 1057 (D.D.C. 1983) (Plan of Reorganization), aff'd sub nom. California v. United States, 464 U.S. 1013 (1983) (approving Plan of Reorganization).

<sup>3</sup> The U.S. experience with separation is actually much longer than 25 years, dating back to the formation of the Federal Communications Commission (FCC) when there was a question of whether AT&T, with its two-way networks, should be allowed into broadcasting. Separation was also the central issue in the 1956 Consent Decree, where AT&T agreed to limit itself to regulated telephone services. See United States v. Western Electric Co. 1956 Trade Cas. (CCH) ¶ 68,246 (D.N.J. Jan. 24, 1956).

<sup>4</sup> “Long distance” is the general term for telecommunications services that allow customers to call between local exchange areas, which were geographic communities of interest designated early in the development of the telephone industry in the United States and generally comprised of a city or town and the associated rural areas.

of a line of business prohibition.<sup>5</sup> The next most severe approach is structural separation, where an operator is allowed to provide both the competitive service and the non-competitive functions, but must provide them through separate subsidiaries. The third type is functional or operational separation in which both competitive and non-competitive functions are provided by a single entity, but the company must organize its operations so that the competitive market functions operate separately from the non-competitive market functions. The least severe form of separation is accounting separation, where a single entity serves both markets and the operations are integrated, but the operator is required to keep separate accounting records for the competitive and non-competitive services.

In this paper we examine several experiences in the United States with different forms of business separation: 1) The FCC Computer Inquiries in which the regulator tried to define and enforce a boundary between telecommunications and computing that operators were required to reflect in their organizational structure; 2) The breakup of AT&T, in which the government tried to identify monopoly elements of the telephone system and separate them from the potentially competitive portions of the system; and 3) The experiments in New York and Pennsylvania with dividing an incumbent local exchange company into a NetCo and a RetailCo. Particularly interesting in the discussion about the breakup of AT&T will be the development of competitor access to Operational Support Systems (OSS), which was seen in the United States as a necessary condition for allowing the RBOCs into interLATA long distance markets. This topic will be discussed in its own section of the paper. We also relate the separation issue to a current U.S. debate over potential discrimination in networks: the net neutrality debate. In general we find that:

1. Business separation lowers efficiency and delays innovation. The natural boundaries of businesses in telecommunications are always changing in unpredictable ways, as are the locations of bottlenecks. Adapting business separation rules to new realities takes time. The

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The definitions are circular: That which is not local is called long distance and that which not long distance is called local.

<sup>5</sup> The breakup created in the country a number of what were called Local Access Transport Areas (LATAs), which were geographic areas that were generally smaller than a state and that often crossed state boundaries. AT&T was allowed to provide long distance between LATAs (called interLATA long distance), but could not provide intraLATA long distance unless the relevant state public service commission (PSC) granted permission. Under the divestiture decree, the RBOCs were prohibited from providing interLATA long distance until the court overseeing the divestiture decree granted permission.

resulting regulatory delays create costs, slow the delivery of innovations to the market place, and may slow the development of competition.

2. Business separation creates regulatory costs. The separation creates interest groups, some of whom benefit from the separation and some of whom can gain strategic advantage by changing the separation. These groups compete in the regulatory arena rather than in the marketplace, which clogs the regulatory process and decreases the resources devoted to marketplace competition.
3. Behavioral rules are more effective than separation measures. While structural or functional separation were often justified *ex ante* as necessary for bringing about the benefits of competition, actual experience showed otherwise. For example, rules requiring equivalent competitor access to OSS were less intrusive and were more efficient for providing equivalent internal and external access to bottleneck facilities than any form of structural or functional separation.

These findings should inform the current debates. Separation is not an end to itself, but rather a means by which regulators and policy makers hope to achieve equivalent access to bottleneck facilities for integrated providers and their rivals. U.S. regulators and policy makers progressively came to the view that the ultimate objective of equivalent access to bottleneck facilities could be better achieved through equal access regulation of interconnection than through separation measures. Given the evident failures of experiments with various forms of separation and the inefficiencies they caused, and the evident success of OSS access even in legacy systems where operators had to incur extra costs to make the access possible, it would appear that looking forward a behavioral conduct approach would be preferred to separation for any bottlenecks that may develop in next generation networks (NGN).

This paper proceeds as follows: The next section examines the U.S. experience with separation in Computer Inquiries I, II, and III. The following section then describes the U.S. experience with the break-up of AT&T, which imposed a barrier between long distance and local exchange service that proved to be outdated. The next section describes the U.S. experience with NetCos and RetailCos. The paper then examines how the development of equivalent interfaces for OSS between incumbent local exchange carriers (ILECs) and new entrants was successfully used as a basis for lifting separation

requirements. . The subsequent section reviews lessons from vertical integration to the net neutrality debate. The final section is the conclusion.

## II. Computer Inquiries

Through its proceedings known as Computer Inquiries I, II, and III (hereafter CI-I, CI-II, and CI-III, respectively), the FCC attempted to separate telecommunications and computing by imposing various restrictions on telecommunications companies. In the early 1970s in CI-I,<sup>6</sup> the FCC tried to create a distinction between data processing and telecommunications. In doing so the FCC addressed the concern that AT&T might use its bottleneck network facilities to discriminate against rivals in data processing if the monopolist were allowed to provide data processing services. The FCC chose structural separation as its competitive safeguard.<sup>7</sup>

Soon technology changes overtook the FCC's CI-I decision and the agency launched its CI-II inquiry.<sup>8</sup> (Zarkin, 2003) Indeed, technology issues progressed so rapidly that the regulator had to revise the scope of its inquiry (*CI-II Supplemental Notice*) to consider the effects of microprocessors and distributed processing, which had rendered the FCC's definitions meaningless. (*CI-II Final Decision* at 23) Furthermore the rapid evolution of technology made it clear that attempting to rely upon a definitional approach to distinguishing between monopoly telecommunications and competitive data processing would simply accentuate controversy and hinder innovations, so the agency amended its inquiry to examine other approaches. (*CI-II Tentative Decision*)

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<sup>6</sup> Regulatory & Policy Problems Presented by the Interdependence of Computer & Communications Services & Facilities, 28 FCC 2d 291 (1970) [hereinafter *CI-I Tentative Decision*]; 28 FCC 2d 267 (1971) [hereinafter *CI-I Final Decision*], aff'd in part sub. nom. GTE Service Corp. v. FCC, 474 F.2d 724 (2d Cir. 1973), decision on remand, 40 FCC 2d 293 (1973).

<sup>7</sup> The FCC required telecommunications companies with annual revenues of one million dollars or more, if they chose to provide data processing, to establish a separate data processing entity that would have separate: accounting books, officers, operating personnel, equipment and facilities. The telecommunications carrier was prohibited from promoting the data processing services offered by the separate subsidiary.

<sup>8</sup> Notice of Inquiry and Proposed Rulemaking [hereinafter *CI-II Notice*], 61 FCC 2d 103 Supplemental Notice of Inquiry and Enlargement of Proposed Rulemaking [hereinafter *CI-II Supplemental Notice*], 64 FCC 2d 771; Tentative Decision and Further Notice of Inquiry and Rulemaking [hereinafter *CI-II Tentative Decision*], 72 FCC 2d 358; and 77 F.C.C.2d 384 [hereinafter *CI-II Final Decision*].

In its *CI-II Final Decision* issued in 1980, the FCC chose a basic/enhanced service dichotomy. Basic service was defined as the common carrier<sup>9</sup> offering of transmission capacity for the movement of information. Enhanced service combined basic service with “computer processing applications that act[ed] on the format, content, code, protocol or similar aspects of the subscriber's transmitted information, or provide[d] the subscriber additional, different, or restructured information, or involve[d] subscriber interaction with stored information.” The agency maintained its structural separation requirement, but limited it to AT&T and GTE. (*CI-II Final Decision* at 5 and 12)

However, within five years the FCC concluded that technology had overtaken its policies and that the costs of structural separation exceeded the benefits. Zarkin (2003) described how the CI-II structural separation had become unworkable and delayed innovation:

“Experience demonstrated the difficulty carriers faced in providing certain offerings that did not neatly fit within the Computer II basic/enhanced services typology. Protocol conversion was one such service. Protocols are the standards for exchanging information between two computers. Protocol conversion is a way of processing information that permits communication between computers with different protocols. Protocol conversion was generally classified as an enhanced service, but in many instances it was desirable to integrate it with basic services, something that was not possible for AT&T and the RBOCs under the maximum separation policy. Protocol conversion could be offered in many instances without being integrated into the communications network, but at a higher cost. Initially, the FCC responded by establishing a process through which waivers could be obtained on a case by case basis.”

“Uncertainty regarding how to apply the Computer II rules also existed in the area of voice storage. In 1981, AT&T sought a waiver of the structural separation requirement to offer ‘Custom Calling II,’ a voice messaging service. While acknowledging that such a service could be offered under structural separation, AT&T argued that it would be costly to do so. Opponents sought to have Custom Calling II classified as an enhanced service, contending that this would make it possible for companies other than common carriers to develop competitive alternatives. The FCC accepted this logic and ruled against AT&T. Several years later, however, no competition existed and the FCC began to rethink its earlier decision.” (Citations omitted.)

In a paper published in 1986, FCC Chairman Mark Fowler and two of his key staff explained why structural separation was costly and how it delayed the introduction of new services.

“(A)s competition has come to major sectors of the telecommunications industry, concern has increased that the direct and indirect costs of preventative regulatory measures are now

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<sup>9</sup> “Common carrier” refers to “a telecommunications company that is available for hire on a nondiscriminatory basis to provide communication transmission services, such as telephone and telegraph, to the public.” (Source: FCC web site <http://www.fcc.gov/connectglobe/glossary.html>, accessed 18 May 2008.)

inordinately high, resulting primarily in higher prices to the consumer and underutilization of the public switched network.”

“(S)tructural restrictions have imposed significant costs on society, both directly through the duplication of costs and indirectly through the absence of services and products for which the public would be willing to pay their true costs.” (Fowler et al., 1986, footnotes omitted)

The FCC’s response to the failure of its CI-I and CI-II approaches was to adopt an equal access and cost separations approach in CI-III.<sup>10</sup> By this time the United States had broken up AT&T, so the business separation rules applied to AT&T, GTE, and the RBOCs. In CI-III the FCC decided to allow AT&T and the RBOCs to offer enhanced services on a structurally integrated basis if they gave competitors equal access to their networks. This equal access included physical interconnection and unbundling of network services, such as signalling and network management. A policy called Comparably Efficient Interconnection (CEI) was the first phase of unbundling and was a transitional program to Open Network Architecture (ONA) under which RBOCs would receive complete relief from structural separation requirements by agreeing to a long-term plan for making “building blocks” of their networks available to enhanced service rivals. CEI required carriers to submit unbundling plans on a service-by-service basis whenever the carrier wanted to introduce a new enhanced service. In a sense, CEI was an evolving separation plan as each new enhanced service offering revealed possible new bottlenecks that necessitated regulatory investigation. Once the FCC approved a CEI plan, a process that took over 200 days on average, the carrier was then allowed to provide that service free from structural separation. (Prieger, 2002; Zarkin, 2003)

Because after the breakup AT&T no longer controlled local telephone facilities, the FCC quickly relieved AT&T of its CEI requirements. (Prieger, 2002; Fowler et. al, 1986) But the requirements remained for the RBOCs and, as one might imagine, the CEI process provided a means by which RBOCs and their rivals might engage in non-market competition, each trying to obtain regulatory rules favorable to its own business plans and market position. And this is indeed what happened. Prieger (2002) describes the back and forth of regulatory and court rulings:

“The BOCs began to submit CEI plans to the FCC in 1987. In June 1990, a court case (*California I*) required the FCC to disallow development and introduction of new enhanced services (although carriers were allowed to continue to file for CEI waivers). The FCC resumed the CEI regime in

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<sup>10</sup> In the Matter of Amendment of Section 64.702 of the Commission’s Rules and Regulations (Third Computer Inquiry), 104 FCC 2d 958 (1986).

February 1992. In 1992 and 1993, the BOCs individually received approval of their ONA plans and the freedom to offer enhanced services without filing CEI plans.”

“In 1994, another court case (*California III*) forced the FCC to reinstate the CEI plan requirements. The FCC required the BOCs to file retroactive CEI plans for services introduced after the lifting of structural separation. From the retroactive CEI filings in January 1995, one can thus enumerate the new services during the unregulated interim. Thereafter, the CEI plan requirement remained in effect for the BOCs until 1999. In February 1999, the FCC discontinued preapproval and required only that the BOCs post CEI plans on the Internet.”

This back and forth in business separation policies allowed Prieger to estimate how the CEI process affected innovation. He found that some enhanced services that would otherwise have been profitable and provided value for consumers were nonetheless not financially viable under the CEI regime because of the costs of developing and getting approval for the CEI plans. He was able to quantify this suppression of innovation, finding that the RBOCs introduced 60 percent to 99 percent more enhanced services during the time that the CEI requirements were lifted than they would have if the stricter regulation had still been in place. He further found that the companies would have introduced 62% more enhanced services from 1987 through 1997 had the CEI processes not been in place.

The basic lessons from the Computer Inquiry experiences included:

1. In all attempts at separation, technology change overtook the rules and the rules imposed costs on consumers and the regulator.
2. The separation notably and measurably hindered innovation.
3. The FCC came to recognize that separation was ineffective and costly, but the approach of starting with separation and migrating to less intrusive policies later created opportunities for gaming.

### **III. Breakup of AT&T**

In 1984 the United States broke up AT&T, which was at that time the largest telecommunications company in the world. The breakup provides an example of the creation of a wholesale-retail dichotomy based on assumptions that ultimately proved to be false. The wholesale-only service in this case was the long distance access service provided by the RBOCs, which allowed the retail

interLATA long distance service providers – AT&T, MCI, Sprint and their rivals – to originate and terminate long distance calls. As we describe in this section, the faulty assumptions, although based on long held conventional wisdom, led to excessive legal battles and other inefficiencies.

The basic concern that led to the breakup was that AT&T had used its control of bottleneck local telephone networks to foreclose<sup>11</sup> competitors and to cross subsidize its potentially competitive markets, primarily long distance and manufacturing. (Temin, 1990) Because the primary driver of the breakup was a concern over AT&T's control of the local telephone networks, the breakup required AT&T to divest its ownership of the RBOCs, which owned the local networks. (Hughes, 1996)

The underlying theory for the break up AT&T was based on two basic assumptions that turned out to be wrong. One assumption was that the division between local exchange and long distance was a natural business boundary such that markets and companies could be unambiguously divided accordingly. The second basic assumption was that the provision of local telephone lines was a natural monopoly. (Jamison, 2002a) We next explain why these assumptions were wrong. We then describe the consequences of this case of imposing an artificial business boundary.

Local exchange boundaries largely acted as regulatory constructs that reflected the technologies and politics of telephone franchises of the early 1900s, but that were in conflict with modern technologies and current economic realities.. . (Jamison, 1999) Early telephone technologies could not carry calls between cities, so telephone service was limited to service within a city, which became known as a local exchange. Although short interexchange lines were developed within a few years, it was over 15 years before long distance calling of any consequence was commercially available. (Brock, 1981, pp. 97-99, 104-105) This technology boundary became a regulatory boundary through the telephone franchising process: prior to the development of state and federal regulation, telephone companies had to obtain permission from cities to develop telephone networks within their boundaries (Nix and Gabel, 1993; Gabel, 1994; Mueller, 1993). Local service prices were fixed in the franchise agreements.<sup>12</sup> (Mueller, 1997, p. 37)

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<sup>11</sup> Foreclosing a competitor means that the dominant firm is taking steps to prevent a rival from entering a market or to limit the amount of competitive pressure the rival can put upon the dominant firm.

<sup>12</sup> This second era of telecommunications competition in the United States was marked by a refusal by AT&T to interconnect with its rival telephone companies. (Mueller, 1993; Brock, 1981) Industry regulators began requiring AT&T to interconnect with its rivals in the early 1900s and, as Mueller (1997, pp. 30-31) observes, the forced

State and federal telephone regulation in the United States adopted and then reinforced the local-long distance dichotomy. State regulation began in the early 1900s and the regulatory agencies adopted the local price structures that telephone companies had developed during the city franchise era. Federal regulation began in 1910 when Congress extended the Interstate Commerce Commission's (ICC) authority to include telecommunications, but neither the ICC and nor the FCC, which was created in 1934, had authority to over local telephone prices. (Brock, 1981, pp. 158-161, 178-180) The interactions of state and federal regulators in overseeing telephone company prices made the distinction between local and long distance telephony an important regulatory paradigm. State and federal regulators interacted primarily during their negotiations on how much telephone company cost each regulator would be liable for covering in prices.<sup>13</sup> The methods they adopted – called Separations – embedded the local, intrastate long distance, and interstate long distance paradigm in the formulas. This meant there would be winners and losers if regulators were to drop the local-long distance dichotomy; a change in the definition local service would have cascading impacts throughout the Separations process, impacting the politically sensitive prices that state regulators set. (Fowler et al., 1986; Jamison, 2002b, pp. 258-261)

Since the local-long distance dichotomy had become part of the mindset of regulated telecommunications – it was central to the authority of local franchising authorities,<sup>14</sup> the political economy of ratemaking, and the jurisdictional sensitivities of the state and federal regulators – no one challenged the MFJ when it adopted the same paradigm. But as Jamison (2002a), explained, events were already unfolding that would undermine the concept of a local exchange boundary.

“Interestingly, concomitant with this breakup of the Bell System, business events were unfolding that refuted the breakup's underlying theory. The development of the competitive access providers (CAPs) -- companies that provided high-speed telecommunications services in competition with BOCs and other incumbents -- called into question the belief that local telecommunications was a natural monopoly. In the late 1970s, the Port Authority of New York City developed the concept of a high-speed telecommunications network that would compete

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interconnection killed competition because it removed the primary means by which the companies could viably compete, namely service differentiation.

<sup>13</sup> Both sets of regulators used rate of return regulation and, because state regulators had jurisdiction over intrastate prices and the FCC had jurisdiction over interstate prices, the regulators had to determine how much of a telephone company's revenue requirement would be covered in by the state prices and how much would be covered by the interstate prices. (Jamison, 2002b, pp.259-261)

<sup>14</sup> Some states did not remove franchising authority from local governments even though the states had effectively granted all intrastate economic regulation to the state PUC.

with New York Telephone, the New York BOC. In partnership with Merrill Lynch and Western Union, the Port Authority formed Teleport Communications Group (TCG) in 1983 and began signing up customers in 1984. CAPs' influence grew quickly. By 1988 there were eleven CAPs operating in ten US cities and by 1993 there were thirty CAPs. In 1994 TCG became the first Competitive Local Exchange Carrier (CLEC) by offering [a] switched local telecommunications service in New York, Boston, and Chicago in competition to the BOCs serving those cities.” (Citations omitted)

Problems with trying to mix an artificial separation of local and long distance with opening markets to competition became evident soon after the breakup. Long distance companies were heavily dependent on ILECs: Almost 99 percent of long distance companies' calls passed through ILEC networks and long distance companies' interconnection payments to local exchange companies (called long distance access) constituted nearly 50 percent of the long distance companies' costs. (Jamison, 1995) The resulting strategic tension led the long distance companies to lobby hard to ensure that the RBOCs were not allowed to provide interLATA long distance. (Jamison, 2002a) The RBOCs had their own strategic imperatives. The long distance restriction prevented the BOCs from competing for large customers who wanted one stop shopping. The RBOCs knew that the long distance companies and the CAPs would eventually take the most profitable customers. (Jamison, 2002a) Also, removing the artificial boundary between local and long distance would stimulate growth. (Weisman, 1995)

Until the passage of the Telecommunications Act of 1996,<sup>15</sup> which as we explain below provided a clear path for the removal of the long distance restrictions, the long distance companies and ILECs fought in the regulatory, political, and legal arenas to gain an advantage in overcoming the legal barrier to open competition. Within a year of the breakup, the RBOCs began pushing for legislation in Congress that would lift at least some of the line of business restrictions. Seemingly hardly a year went by without both the long distance companies and the RBOCs working with their respective Congressional supporters to pass favorable legislation. The lobbying continued even after the passage of the 1996 Act as the industry sought to restructure itself: according to an analysis by the Washington Post in 1998, the local and long distance telephone companies had spent \$166 million on legislative and regulatory lobbying since 1996, more than the tobacco,

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<sup>15</sup> Telecommunications Act of 1996, Public Law No. 104-104, 110 Stat. 56 (codified as amended in scattered sections of 15, 18, and 47 U.S.C.). [hereinafter 1996 Act]

aerospace, and gambling lobbies combined.<sup>16</sup> Not only did telephone companies use the regulatory arena to build records for their lobbying cases on the long distance restrictions (Kaserman and Mayo, 2002), but the newly formed CLECs got caught up in the regulatory process to such an extent that some of them went bankrupt. (Foreman, 2003)

At the end of the day, the competitive marketplace achieved what regulation had long tried to avoid. The long distance companies, which had been a creation of the local-long distance dichotomy and of regulation, disappeared from the marketplace, having either been acquired by the RBOCs or closed down by their own shareholders. That the ILECs were the victors over the long distance companies indicates that local telephone lines were an important asset, but not necessarily a bottleneck. Indeed today wireless communications are rapidly replacing fixed line service, which has now become a luxury that is on the decline (Hauge et al., 2008). The battle over long distance distracted the industry and its regulators from the much more important business of broadband development. (Jamison, 2002a)

The basic lessons from the breakup of AT&T included:

1. In markets as dynamic and unpredictable as telecommunications, there is a strong risk that business line divisions drawn in today's environment will be overtaken by market and technology changes.
2. Artificial industry boundaries imposed by regulation led rivals to invest heavily in the regulatory and political processes in order to gain a regulatory advantage that they were unlikely to gain in the marketplace.
3. Regulatory imposed barriers to competition delay important changes that would benefit customers.
4. Regulatory battles over separation boundaries can diminish new entrants' resources which are needed for marketplace success. Furthermore, they favor entrants that are effective in the regulatory arena rather than those that are effective in the marketplace.

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<sup>16</sup> "Telecommunications Industry Is More Politically Active Than Ever," *The Washington Post* Sunday, December 6, 1998, p. H1.

5. Undoing the separation boundaries, once their ineffectiveness has become apparent, leads to costly merger and divestiture processes that consume operator and regulatory resources even though the industry restructuring is important. Furthermore, the greater the restructuring the more problematic are the regulatory processes, perhaps even making some important changes impossible to achieve.

#### **IV. NetCos and RetailCos**

The idea of structural or functional separation of local telecommunications network providers often arises when sector regulators or policy makers become concerned about how to deal with incumbent market power when opening a market to competition. In the United States, these concerns led to several proposals to require ILECs to create separate subsidiaries for providing wholesale network services (NetCo) and retail services (RetailCo). There were two actual attempts to implement such arrangements: One with Rochester Telephone in New York and one with Bell Atlantic-Pennsylvania (part of Verizon). The New York case was a voluntary separation and the Pennsylvania case was an involuntary separation. Both cases ended in frustration over the lack of a clear purpose and the myriad of details to be resolved. We describe these experiences in this section.

##### *A. The Rochester Experience*

In February 1993, Rochester Telephone filed a proposal with the New York State Public Service Commission (NYPSC) to restructure the company and open its Rochester, New York, local exchange market to competition. A primary motivation for the company was a desire to form a holding company structure that it hoped would decrease regulatory oversight of its competitive operations. Despite its general opposition to holding company structures, the NYPSC approved a joint stipulation of parties in the resulting case that outlined a voluntary structural separation.<sup>17</sup> As Crandall and Sidak (2002) described the agreement:

“The joint stipulation established an ‘Open Market Plan’ (OMP) with two major components. First, the Open Market Plan ‘reinvented’ Rochester Telephone by creating (1) a holding company (Frontier Corporation) that controlled the stock in each of Rochester Telephone’s newly created subsidiaries, (2) a regulated ILEC (Rochester Telephone Corporation, or RTC), and (3) a ‘lightly’

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<sup>17</sup> Petition of Rochester Telephone Corporation for Approval of Proposed Restructuring Plan, Petition of Rochester Telephone Corporation for Approval of a New Multi Year Rate Stability Agreement, Case 93-C-0103, New York Public Service Commission, November 10, 1994. [hereinafter *Rochester Restructuring Order*].

regulated CLEC (Frontier Telecommunications of Rochester, or FTR). Second, the joint stipulation drafted a regulatory plan for the period January 1, 1995 through December 31, 2001. The regulatory plan addressed rates (including revenue requirement), service quality (network and customer service), and enhancement of competition.” (Citations omitted)

Trebing (1995) summarized the optimism for what became known as the Rochester Plan this way:

“Under the Rochester Plan (approved by the New York Commission for Rochester Telephone in 1994), the network remains under regulation with an obligation to sell comparable service to all buyers on equal terms. It also has an obligation to provide basic service to those who demand it, and it is structurally separated from a deregulated marketing affiliate which is able to buy and sell all forms of communications services. The network has its own debt financing and its own board of directors. The New York Commission can impose full reporting requirements on the network to assure that investment and quality of service are maintained. The deregulated marketing affiliate of Rochester Telephone is free to buy from the network or from any other source of supply—thereby inducing the threat of bypass as a stimulus for network innovation and efficiency.”

The NYPSC recognized that even voluntary structural separation would lead to lengthy regulatory proceedings, but believed that the promise of improved outcomes for market competition would make the effort worthwhile. However after numerous proceedings, the NYPSC began expressing frustration with the complexity of the process. The agency faced several reconsiderations of its rate setting policies for holding companies. Frontier failed to meet service quality standards in 1996 and 1997 and the NYPSC levied of more than \$1 million in fines. Pricing for the wholesale services remained to be controversial as CLECs continued to ask for greater discounts, just as they did in regulatory proceedings in states where there was no structural separation. It also remained difficult for CLECs to move customers from the ILEC and the CLEC experiences in New York mirrored the CLEC experiences in other states. (Crandall and Sidak, 2002)

Even though the premise for structural separation was to enhance competition, it is unclear that it had its intended effect as competition remained slow to develop. (Crandall and Sidak, 2002) However, as has been the case across the United States, competition for local telecommunications eventually took hold in New York. In 2005 the NYPSC found that the company had lost about 23 percent of its access lines, slightly less than the 25 percent loss experience by Verizon in the state.<sup>18</sup>

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<sup>18</sup> Proceeding on Motion of the Commission to Examine Issues Related to the Transition to Intermodal Competition in the Provision of Telecommunications Services. *Statement of Policy on Further Steps Toward Competition in the*

The status of the structural separation plan remains tied up in regulatory proceedings. The NYPSC allowed the rules and the majority of provisions on Frontier's structural separation plan to expire at the end of 2004, but some of the corporate governance rules remained in place. The company filed a petition with the NYPSC in April 2005 seeking to terminate the remaining provisions.<sup>19</sup> The NYPSC has yet to rule on the petition.

### *B. The Pennsylvania Experience*

The Pennsylvania Public Utility Commission (PUC) imposed a form of structural separation on Verizon in 2001. The PUC soon found that while structural separation appeared attractive in concept, the actual implementation was complex and resource intensive, leading the PUC to abandon the effort. (Crandall and Sidak, 2002)

In September 1999, the PUC issued an order instructing Verizon to structurally separate its wholesale operations from its retail operations.<sup>20</sup> The PUC asserted that structural separation was not just an efficient means for ensuring local service competition, but also necessary to accomplish that goal. Indeed, as the PUC stated in its *Global Order* addressing this and numerous other issues, "we have found that we cannot exercise our duty to enforce, execute, and carry out the pro-competition mandates of (our statutes) absent structural separation." (parenthetical added) The PUC thought it would take about one year to accomplish the structural separation and, because the record did not

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*Intermodal Telecommunications Market and Order Allowing Rate Filings*, Case 05-C-0616, New York Public Service Commission, April 11, 2006.

<sup>19</sup> Petition of Rochester Telephone Corporation for Approval of Proposed Restructuring Plan – Status of Frontier Telephone of Rochester, Inc.'s Open Market Plan, April 5, 2005.

<sup>20</sup> Joint Petition of Nextlink Pennsylvania, Inc.; Senator Vincent J. Fumo; Senator Roger Madigan; Senator Mary Jo White; the city of Philadelphia; The Pennsylvania Cable & Telecommunications Association; RCN Telecommunications Services of Pennsylvania, Inc.; Hyperion telecommunications, Inc.; ATX Telecommunications; CTSI, Inc.; MCI Worldcom; and AT&T Communications of Pennsylvania, Inc. for Adoption of Partial Settlement Resolving Pending Telecommunications Issues, and Joint Petition of Bell Atlantic Pennsylvania, Inc., Conectiv Communications, Inc.; Network Access Solutions; and the Rural Telephone Company Coalition for Resolution of Global Telecommunications Proceedings. *Opinion and Order*, Docket Nos. P-00991648 and P-00991649, Pennsylvania Public Utility Commission, August 26, 1999. [hereinafter, *Global Order*]

contain enough information to fully implement structural separation, the PUC said it would launch a new proceeding, which it did in April 2000.<sup>21</sup>

The PUC's *Global Order* triggered several events related to structural separation. Verizon appealed the PUC's decision to the Commonwealth Court of Pennsylvania and to the Federal District Court. These and other court proceedings threatened to delay the development of structural separation, so the PUC asked the parties to negotiate a settlement, which they did. Fourteen parties agreed to a settlement that would remove the PUC's wholesale-retail separate subsidiary requirement, but the Commonwealth Court would not allow the PUC to consider the settlement. Also, as per the *Global Order*, Verizon submitted a structural separation plan in November 1999.

Although the Commonwealth Court would eventually uphold the PUC's authority to order structural separation, the PUC became concerned about the delay and so in April 2000 issued its *Order Instituting Proceeding* to flesh out the details on structural separation. Recognizing that even though less than five months had passed since Verizon had filed its structural separation that circumstances in telecommunications change rapidly, the PUC invited Verizon to file a new plan, which the company did. Verizon estimated that the plan's implementation costs would be approximately \$800 million and that annual costs would be about \$200 million.<sup>22</sup> (Verizon Pennsylvania Inc., 2000; Crandall and Sidak, 2002) Keeping with its view that structural separation could be accomplished within a year of its *Global Order*, the PUC directed the Administrative Law Judge (ALJ) in charge of the structural separation proceeding to issue a recommended decision within six months.

Finding numerous deficiencies with the record in the restructuring proceeding, primarily Verizon's failure to provide sufficient cost information and detailed separation plans during the approximately nine months that the ALJ considered the case, the ALJ issued his *Recommended Decision* that the PUC should impose its own structural separation plan on Verizon.<sup>23</sup> The ALJ also identified

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<sup>21</sup> Structural Separation of Verizon Pennsylvania, Inc., Retail and Wholesale Operations, *Order Instituting Structural Separation Proceeding*, Docket No. M-00001353. Pennsylvania Public Utility Commission, April 27, 2000 [hereinafter *Order Instituting Proceeding*].

<sup>22</sup> Verizon's annual revenue in Pennsylvania was approximately \$4.4 billion at that time. (Source: FCC ARMIS reports) This means that implementation costs would be about nineteen percent of Verizon's annual revenue in the state and annual costs would be about five percent of the company's annual revenue.

<sup>23</sup> Structural Separation of Verizon Pennsylvania, Inc., Retail and Wholesale Operations, *Recommended Decision*, Docket No. M-00001353. Pennsylvania Public Utility Commission (Wayne L. Weismandel, ALJ), January 26, 2001 [hereinafter *Recommend Decision*].

several major policy issues that would need to be resolved, including who (if anyone) would have provider of last resort responsibilities, the distribution of funds for universal service subsidies, “whether the Verizon retail affiliate should be required to have significant independent minority shareholder interests, and whether (and if so, how) existing Verizon retail customers should be forced to migrate to CLEC’s (including the Verizon retail affiliate).” (*Recommended Decision*)

Considering at least eight proposals for structural separation proposed by various parties in the proceeding, the PUC in March 2001 decided to soften its demand for full structural separation and instead offered Verizon the opportunity to accept what the PUC called a functional/structural separation that would incorporate elements of some of the proposals advocated in the proceeding.<sup>24</sup> The PUC offered several reasons for changing directions, including the cost of continuing regulatory oversight of full structural separation, the time it would take to develop and implement a full structural separation plan, the potential for prolonged litigation and regulatory micromanagement of Verizon’s operations, and the opportunity to use an alternative set of competitive safeguards, including a code of conduct, that would promote competition just as well as structural separation. The PUC’s *Opinion and Order* stated:

“[A]nything less than full structural separation would require continuing regulatory oversight, even though part of our goal in deregulating the industry is to reduce oversight. However . . . even with the implementation of structural separation of Verizon’s wholesale and retail arms, no less regulatory oversight than that currently prevailing will be required to ensure compliance.”

In its press release<sup>25</sup> announcing the decision, the PUC quoted its Chairman John M. Quain explaining the superiority of safeguards over full structural separation:

“A functional structural separation will be seamless for Verizon customers because they will never actually be moved to a new company. At the same time, a strong code of conduct and increased penalties tied to Verizon’s performance should be enough to convince competitors that this commission will not tolerate any discriminatory actions by Verizon.”

Sewell (2001) elaborates on how the PUC came to change its mind on structural separation. He summarizes Commissioner Terry Fitzpatrick explaining how he and his fellow commissioners came to

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<sup>24</sup> Structural Separation of Bell Atlantic-Pennsylvania, Inc. Retail and Wholesale Operations, *Opinion and Order*, Docket No. M-00001353, Pennsylvania Public Utility Commission, Mar. 22, 2001 [hereinafter *Opinion and Order*].

<sup>25</sup> Pennsylvania Public Utility Commission, “PUC Orders Functional Structural Separation of Verizon,” March 22, 2001.

realize that full structural separation would require much more regulatory oversight than they originally thought. Sewell quotes Fitzpatrick as saying that structural separation “didn’t look like as much of a silver bullet when we looked at the details of it.”

Crandall and Sidak (2002) explain that the PUC’s *Opinion and Order* adopted a two prong approach:

“The first prong mandated that the ILEC undertake ‘functional separation’ of its wholesale and retail units—that is, the ILEC would have to separate its wholesale and retail divisions in a way that ‘provides for non-discriminatory access to its wholesale division by all CLECs.’ Activities that the Pennsylvania PUC functionally separated from Verizon’s wholesale operations included personnel, accounting, record keeping, and business practices. The second prong directed the ILEC to create an advanced-services affiliate, separate from the retail division of its business.” (Citations omitted)

The PUC also pursued the development of several behavior rules that would govern how Verizon would treat its own retail operations relative to those of its rivals.

Later that year the PUC changed its mind on functional separation, deciding to rely just on the behavioral rules. (Crandall and Sidak, 2002) Again, Commissioner Terrance Fitzpatrick explained the PUC’s reasoning, calling functional separation an “intrusive remedy designed to fix a problem that has not been shown to exist.” (Bischoff, 2001)

The basic lessons from the NetCo and RetailCo experiences included:

1. Implementation of structural separation involved numerous, unanticipated details even though ownership remained common.
2. The structural separation that was achieved appeared to have little impact on competition.
3. Regulatory resources were consumed not only in attempting to develop the separation, but also in ongoing regulatory oversight and in proceedings to undo the separations that were achieved.
4. The approaches were much more complicated than originally thought and came to be viewed as solutions in search of a problem.

## **V. Achieving Equivalence through Behavioral Methods**

Separation measures are usually promoted on the basis that they will be more effective than behavioral regulation. However, after the history of failed separation measures outlined above, the 1996 Act marked the recognition of U.S. policymakers that equivalence and competition could be achieved more efficiently without separation. Under the terms of the legislation, the ILECs were under an obligation to provide competitors with access to their facilities and supporting systems on a basis equivalent to that of the ILECs themselves. In particular, policymakers concluded that competitors would need some form of “equal access” to ILEC bottleneck facilities, at least for some transitional period as competitors built out their own networks.

The goal of the 1996 Act, correspondingly, was to promote competition by proscribing all legal barriers to entry (e.g., exclusive franchises) and eliminating or neutralizing the existing market dominance of the ILECs. A brief overview of the basic competitive framework incorporated in the 1996 Act follows.

The 1996 Act provided for three avenues of entry into what was viewed as the local market: facility based entry; the use of ILEC unbundled network elements (UNEs); and resale of ILEC retail services. Each of these avenues of entry relied, to varying degrees, on ILEC capabilities in order for competitors to provide services to end user customers. Facility based entrants required interconnection with the ILECs in order to exchange traffic. Entrants using resale or UNEs were reliant on ILECs to provision services or facilities to serve CLEC customers. For example, with pure resale, all network functions, from network facilities to service provisioning to maintenance and repair was provided by the ILEC. A CLEC using UNE loops, but providing its own switching, was dependent on the ILEC for providing collocation space to connect the ILEC-provided loop to the equipment of the CLEC, and for provisioning and maintaining the loop.

Recognizing that ILEC provisioning of facilities and services to CLECs was critical to the success of competition in the local exchange, and that ILECs had no economic incentive to facilitate competitive entry into their core market where over 95 percent of the customers already received service from an ILEC, Congress imposed a number of obligations on ILECs, obligations that were intended to collectively neutralize the market power of ILECs deriving from their market dominance. Per section 251 (c) of the Telecom Act, these obligations are to:

1. Negotiate in good faith with competitors requesting interconnection<sup>26</sup>
2. Interconnect with competitors
3. Provide UNEs to requesting carriers for the purpose of providing telecommunications services
4. Resell their retail services at wholesale rates
5. Notify competitors of network changes that would impact interoperability of networks
6. Permit collocation of competitor equipment necessary for interconnection or access to UNEs

The unbundling requirement proved to be the most contentious, and litigated, issue in the implementation of the 1996 Act. The 1996 Act required that ILECs unbundle only those network elements essential to competitors<sup>27</sup>--a matter that was to be determined by the FCC. The FCC adopted its initial unbundling order in August 1996.<sup>28</sup> That order, and two subsequent orders attempting to specify the elements ILECs were required to unbundle, were reversed or remanded by U.S. Courts of Appeals; in addition, the U.S. Supreme Court also addressed the issue, on appeal, in 1999. (Jamison, 2002a) Not until 2005 did the FCC adopt an unbundling requirement that survived judicial scrutiny.

The line of business restrictions on the RBOCs at the time this legislation was enacted gave Congress a carrot as well as a stick to induce RBOC implementation of the market opening provisions of the 1996 Act. Simply put, Section 271 of the Telecom Act provided that the line of business restrictions, particularly the prohibition on providing in-region interLATA long distance service, would be eliminated once the RBOC complied with a “competitive checklist” of requirements for opening their markets to competition (see Table 1). The unbundling requirements in the checklist were independent of the FCC’s 251 unbundling requirements; that is, even if the FCC removed an element (e.g., local switching) from its

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<sup>26</sup> The basic process for implementing these provisions of the 1996 Act was negotiation between the CLEC and the ILEC. However, either party could invoke the right to have the state regulatory commission mediate or arbitrate issues where the parties could not reach agreement. By statute, the entire negotiation process, including arbitration where requested, was not to exceed 180 days. Not surprisingly, the general language of the statute elicited widely divergent interpretations by the contending parties, and state commission arbitration became the norm.

<sup>27</sup> Section 251(d)(2) of the Act states that the determination of what network elements should be made available on an unbundled basis, regulators should consider whether:

“(A) access to such network elements as are proprietary in nature is necessary; and

(B) the failure to provide access to such network elements would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer.”

<sup>28</sup> *In re Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, Docket No. 96-98, *First Report and Order*, 11:28 F.C.C.R. 15499 (Aug. 8, 1996). [hereinafter *1<sup>st</sup> Report and Order*]

list of elements ILECs were required to unbundle, the RBOCs had an independent obligation under Section 271 to continue to provide that network element to their competitors.

The 1996 Act gave the FCC the authority to determine whether or not an RBOC complied with the requirements of Section 271, and therefore should be permitted to provide interLATA services in a state. However, by statute, the FCC was required to consult with both the U.S. Department of Justice and the state regulatory commission in the state where authorization was requested.

<b>Table 1. Section 271 Competitive Checklist obligations for RBOC relief from interLATA restrictions</b>
<ul style="list-style-type: none"><li>• Interconnection</li><li>• Nondiscriminatory access to network elements</li><li>• Nondiscriminatory access to poles, ducts, and rights-of-way controlled by the RBOC</li><li>• Unbundled local loops</li><li>• Unbundled local transport</li><li>• Unbundled local switching</li><li>• Non-discriminatory access to:<ul style="list-style-type: none"><li>1) 911 and E911 services</li><li>2) Directory assistance services</li><li>3) Operator call completion services</li></ul></li><li>• White page directory listings for competitors' local customers</li><li>• Nondiscriminatory access to telephone numbers for competitors' customers</li><li>• Nondiscriminatory access to databases and associated signaling necessary for call routing and completion</li><li>• Interim number portability (pending national adoption of full number portability)</li><li>• Nondiscriminatory access to services or information to allow competitors to implement local dialing parity</li><li>• Reciprocal compensation arrangements for exchange of local traffic</li><li>• Resale of the RBOC's retail telecommunications services</li></ul>

Equally critical to the success of competitors using ILEC unbundled network elements or resold services was the ability of those CLECs to obtain nondiscriminatory access to ILEC Operational Support Systems (OSS). For example, real-time access to telephone number assignment, timely ILEC provisioning

of UNEs, or expeditious repair of ILEC facilities are all critical to the ability of a CLEC to win and retain customers. In its *1<sup>st</sup> Report and Order*,<sup>29</sup> the FCC ruled that ILEC OSS were themselves unbundled network elements, and required that ILECs unbundle and provide CLECs nondiscriminatory access to these systems for the provision of their services. The FCC's determination that access to OSS met the definition of an unbundled network element was, significantly, upheld by the U.S. Supreme Court. The FCC identified five key OSS functionalities that ILECs were required to unbundle and provide on a nondiscriminatory basis to CLECs:

1. Pre-ordering
2. Ordering
3. Provisioning
4. Maintenance and repair
5. Billing

In order to effect these obligations, ILECs were required to develop electronic interfaces to their internal systems, permitting CLECs to effectively access these systems in the same manner as the ILEC itself. Even with access to ILEC OSS, however, CLECs (and regulators) were concerned with the potential for discriminatory treatment by the ILEC (for example, taking longer to provision service for a CLEC than for an ILEC customer). Consequently, considerable effort was expended to develop performance measurements and reporting requirements, in order to detect any discrimination against CLECs. These measurements were disaggregated by, for example, OSS function, and service type (resale, UNEs, interconnection), to provide as closely as possible an "apples to apples" comparison of ILEC treatment of its own customers compared to CLEC customers. Although the FCC initiated several proceedings,<sup>30</sup> proposing to establish national metrics for OSS performance measurements and reporting, it never formally adopted rules. Rather, the individual states, largely through their 271 proceedings, developed their own performance measures and reporting requirements (which, in fact, were fairly consistent across the states). Moreover, many states also put additional "teeth", in the form of financial penalties, in their requirements that the RBOCs provide nondiscriminatory access to their OSS. In general terms, financial penalties were imposed when, over a period of time, an RBOC failed to meet performance standards (e.g., provisioning interval times) or provided a significantly lower standard of service to CLECs than it did to its own customers.

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<sup>29</sup> *1<sup>st</sup> Report and Order* at 516.

<sup>30</sup> For example, Docket No. 98-56 in 1998 and Docket No. 01-318 in 2001.

Nondiscriminatory access to OSS was a prerequisite to approval of RBOC provision of interLATA services. Although it presented highly complex and technical issues, regulators were ultimately able to successfully define OSS access standards. RBOC 271 approvals followed. In December 1999 New York became the first state to gain Section 271 approval. Arizona in December 2003 was the last state to receive authorization.

Finally, Section 272 of the Act required that, upon approval to provide interLATA services, an RBOC establish a fully separate subsidiary to provide those services. This separate subsidiary requirement expired at the end of the 3 years, unless extended by the FCC. Although the FCC never acted to extend the separate subsidy requirement on an RBOC, its existing rules effectively caused the RBOCs to maintain structurally separate subsidiaries for their long distance services. Those rules would have imposed “dominant carrier” regulation (essentially, full regulation and tariffing requirements) on the RBOC’s interLATA services, regulations that were more competitively onerous than the costs of maintaining a fully separate, but essentially deregulated, subsidiary. By 2007, however, the FCC determined that competition had evolved sufficiently that the costs of requiring a separate subsidiary outweighed any public benefits. With some transitional obligations (e.g., a requirement to provide specified long distance calling plans to low volume users for a 3 year period), the FCC adopted rules that treated interLATA services provided directly by an RBOC (i.e., not through a separate subsidiary) as non-dominant.<sup>31</sup> The basic lessons from achieving equivalence through OSS access included:

1. Although the open ended process for determining what elements were required to be unbundled led to extensive gaming and litigation, the basic framework for achieving equivalence in non-price terms of supply in the 1996 Act proved sound. This model combined behavioral requirements with incentive regulation to achieve a shift to equivalent treatment of competitors and the ILEC’s downstream business unit.
2. ILECs, namely the RBOCs, cooperated in opening access to their OSS to provide equivalent access to their competitors, in exchange for removal of the line of business restrictions.
3. The fact that ongoing structural separation requirements were eliminated once the OSS equal access requirements were met demonstrates that equivalence is not dependent on separation models. Rather it can be achieved through appropriate behavioral rules that

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<sup>31</sup> Report and Order and Memorandum Opinion and Order, FCC 07-159, released August 31, 2007.

leverage network and systems technologies to re-engineer and monitor internal processes within the ILEC to work in a manner which is equivalent.

## **VI. Net Neutrality**

“Net neutrality” is a broad term, with no consensus as to its exact definition. Generally, it stands for the principle that there should be no technology or network restrictions on how users or service providers use the public internet. Proponents of net neutrality are concerned that broadband network owners could use their control over “last mile” broadband facilities to discriminate against competitors in the Internet service or content market. Therefore, they contend that some regulation of these network providers is necessary to preserve the “openness” or “neutrality” of the public internet. (Wu, 2004)

The issue of net neutrality is, to a large extent, an issue of vertical integration. As was the case in preceding sections, the policy debate is largely about what obligations or restrictions, if any, should be imposed on “bottleneck” facility owners to neutralize their market power. Following is a brief overview of the evolving regulatory framework for broadband services.

U.S. policymakers have long viewed the Internet as an engine of innovation and competition, and a broad consensus exists that the Internet should be as open and free from regulation as possible. This viewpoint was codified in the 1996 Act. Section 230(b) establishes a policy of promoting the development of the Internet and preservation of the free, unregulated market for Internet services. Section 706(a) further requires the FCC to encourage the deployment of advanced telecommunications capabilities (i.e., broadband) to all Americans.

Net neutrality first arose as a serious public policy issue in the wake of the U.S. Supreme Court’s 2003 decision in *Brand X Internet Services v. FCC*, upholding the FCC’s determination that cable modem service should be classified as an information service, not subject to traditional common carrier regulation. The FCC accorded similar treatment to wireline telecommunications carriers DSL services in 2005.<sup>32</sup> The underlying rationale of the FCC was that the market for broadband access to the Internet was becoming increasingly competitive, and that competition should be relied upon to spur the deployment of broadband facilities.

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<sup>32</sup> Report and Order and Notice of Proposed Rulemaking, FCC 05-150, released September 23, 2005.

Deregulation and concerns over discrimination by broadband network operators fueled the debate over net neutrality. The case of Madison River, a rural ILEC, provided net neutrality proponents with a concrete example of how broadband facility providers might misuse their control of network facilities to unfair competitive advantage. Madison River blocked its DSL customers from using VoIP (Voice over Internet Protocol) services. In this case, intervention by the FCC did result in Madison River discontinuing that practice.<sup>33</sup>

The FCC also responded more broadly to the concerns about net neutrality. Even though the FCC no longer applies traditional common carrier regulation to broadband facility providers, it does retain some ancillary authority under Title I of the Communications Act. Therefore, coincident with the release of its wireline broadband deregulation order, the FCC also adopted a set of policy principles applicable to broadband facility providers, namely:

- “To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled to access the lawful Internet content of their choice.
- To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled to run applications and use services of their choice, subject to the needs of law enforcement.
- To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled to connect their choice of legal devices that do not harm the network.
- To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled to competition among network providers, application and service providers, and content providers.”<sup>34</sup>

Significantly, the FCC noted also that these principles are “...subject to reasonable network management,”<sup>35</sup> meaning that they did not necessarily bind the FCC to agree with the net neutrality proponents.

The FCC’s policy principles did little to resolve the debate over net neutrality. Indeed, as the debate has become increasingly granular, focusing on specific behaviors or network practices, it has

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<sup>33</sup> *Madison River Communications, LLC and Affiliated Companies*, File No. EB-05-IH-0110, Order, 20 FCC Rcd 4295 (Enf. Bur. 2005).

<sup>34</sup> *Policy Statement*, FCC 05-151, released September 23, 2005

<sup>35</sup> *Policy Statement*, p. 3, footnote 15

produced more questions than clarity. In particular, the claimed benefits of network neutrality have been subjected to greater scrutiny and challenge.<sup>36</sup>

One example of this is the issue of network management. Historically, the Internet has been an open, “dumb”, network, with traffic delivered on a best effort basis. Efforts of network facility owners to “shape” traffic to manage or mitigate network congestion have been opposed by at least some content providers and consumer groups as a violation of “network neutrality”. A current example is the controversy over Comcast’s management of P2P (peer to peer) traffic over its cable modem network. Vuze, a company providing a platform for the downloading of high quality video (e.g., from National Geographic and PBS), has filed a petition for rulemaking requesting the FCC to initiate a proceeding to define specific rules to prevent broadband network operators from degrading or blocking Internet content.<sup>37</sup> Specifically, Vuze alleges that Comcast, a large cable operator, was blocking or degrading bandwidth-intensive traffic such as video distribution. Comcast was using deep packet analysis to identify such bandwidth-intensive applications, and using that information to “shape” or manage network traffic by delaying or disrupting those applications.<sup>38</sup>

Comcast’s response defended the practice, stating that the only traffic it was delaying was P2P traffic where the end user’s computer was being used only for uploads (the absence of download activity being an indicator that the user was not even present), and that this was done only when the network traffic reached specified levels of congestion.<sup>39</sup> Comcast also pointed out the consumer benefits of its network management policy: many Internet services, such as VOIP and internet gaming, are highly sensitive to latency, and the quality of those services would be degraded absent Comcast’s management of network congestion. This example clearly illustrates the complexities inherent in the notion of net neutrality. Why, opponents of regulation-imposed net neutrality ask, is it “neutral” to permit users of one service (like P2P) to degrade the service experience of users of latency sensitive

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<sup>36</sup> See. e.g., the FTC Staff Report, *Broadband Connectivity Competition Policy*, June, 2007, pp. 51-69 for an overview of the principal arguments for and against network neutrality.

<sup>37</sup> Vuze Petition for Rulemaking, November 14, 2007.

<sup>38</sup> A coalition of parties, including Free Press and the Consumer Federation of America filed a Petition for Declaratory Ruling on November 1, 2007, requesting the FCC to rule that Comcast’s practices violated the Commission’s Policy Principles.

<sup>39</sup> Comments of Comcast, FCC WC Docket 07-52, February 12, 2008.

services, while it is not “neutral” to degrade or delay the transmission of non-latency sensitive services in order to preserve the quality of service for those users?

Another example in the net neutrality debate is the suggestion by broadband facility providers that they would introduce premium (sometimes referred to as tiered) services, which would provide a higher quality of service (priority delivery) for those customers paying the higher, premium rate. Proponents of net neutrality argue that the introduction of tiered services would lead to degradation in the quality of Internet service for those unwilling to pay the higher rate, and argue that such tiered pricing should be prohibited. However, opponents regulation-imposed and some analysts contend that flat rate pricing of Internet access is inefficient, deters investment, and prohibits rate structures that would benefit consumers. (Edell and Varaiya, 1999; Hahn and Wallsten, 2006; Hermalin and Katz, 2007; Jamison and Hauge, 2007)

Opponents of regulation-imposed network neutrality have identified other potential costs or inefficiencies associated with network neutrality regulations. One study, for example, concludes that the imposition of network neutrality rules will deter entry and reduce investment in broadband access (the least competitive sector of the Internet). (Ford, Koutsky, and Spiwak, 2006) Others argue that the benefits of vertical integration outweigh the costs associated with net neutrality measures that would prohibit or impede companies from realizing those benefits. (Yoo, 2004)

Although net neutrality continues to be hotly debated in multiple forums, including the FCC and Congress, where some version of net neutrality legislation surfaces annually, the increasing awareness of the complexity of the issue and the lack of consensus on the benefits versus the costs of net neutrality has deterred further regulatory efforts. The conclusion of the Federal Trade Commission in its 2007 investigation is indicative of the current uncertainty as to the wisdom of net neutrality regulations:

“Policy makers should be wary of calls for network neutrality regulation simply because we do not know what the net effects of potential conduct by broadband providers will be on consumers, including, among other things, the prices that consumers may pay for Internet access, the quality of Internet access and other services that will be offered, and the choices of content and applications that may be available to consumers in the marketplace. Similarly, we do not know what net effects regulation to proscribe such conduct would have on consumers. This is the inherent difficulty in regulating based on concerns about conduct that has not occurred, especially in a dynamic marketplace.” (Federal Trade Commission Staff, 2007)

In summary, the current net neutrality issue in the United States illustrates how a structural remedy can appear simple and important on the surface. But with further analysis the proposed policy can appear to be a solution in search of a problem, can be very complex to define precisely and to implement, and may harm consumers by lowering efficiency. Indeed, although there are some people arguing for separation, the most prevalent “separation” issue is whether policymakers should dictate that the basic network be “dumb”, which raises efficiency and other issues, as discussed above. This perhaps indicates that government, industry, and interveners alike now recognize the futility of separation and are looking for behavioral solutions to equivalence issues.

## **VII. Conclusion**

Most countries are coming late to the debate over structural and functional separation in the telecommunications industry. In this paper we examined experiences in the United States over the past 25 years with functional and structural separation of telecommunications service providers. We found that in some instances changing technologies and markets rendered most separation policies obsolete even before they were implemented. In other instances the separation policy initially appeared to be important and reasonable to implement, but proved to be of questionable value and unnecessarily complex. We also found that separation has delayed innovation and encouraged service providers to compete in the political and regulatory arenas. Even though equivalence is the commonly accepted goal, the U.S. experience shows it can be addressed in ways other than structural or functional separation, such as non-discriminatory interfaces. The US experience is that behavioral rules, in the end, proved more effective and sustainable than separation remedies.

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